REPORT RESUMES

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EMERGENCY VICTIM CARE AND RESCUE, INSTRUCTOR'S MANUAL.
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DEVELOPED AT THE STATE LEVEL BY SQUADMEN AND TRADE AND INDUSTRIAL PERSONNEL, THIS MANUAL IS FOR USE BY A QUALIFIED SQUADMAN IN TEACHING FULL-TIME AND VOLUNTEER EMERGENCY AND RESCUE WORKERS IN AN EMERGENCY SQUAD STATION OR TRAINING CENTER. TEACHING GUIDES ARE PROVIDED FOR A 30-HOUR COURSE ON EMERGENCY VICTIM CARE AND A 20-HOUR COURSE ON VICTIM RESCUE. REPRESENTATIVE TITLES ARE (1) EMERGENCY CHILDBIRTH, (2) CORONARY ATTACK AND CHRONIC HEART FAILURE, (3) RESUSCITATION--MANUAL AND MECHANICAL, (4) CLOSED CHEST HEART COMPRESSION, (5) AERIAL LADDER RESCUE, (6) ELECTRICAL EMERGENCIES, AND (7) UNUSUAL SITUATIONS. EACH GUIDE CONTAINS DESIRED RESULTS, EQUIPMENT AND SUPPLIES, REFERENCES, AND THE INSTRUCTIONAL STEPS, INTRODUCING, PRESENTING, APPLYING, AND CHECKING AND FOLLOWUP OF THE LESSON. SUPPLEMENTARY MATERIALS INCLUDE CARTOON ILLUSTRATIONS OF PRINCIPLES AND METHODS OF TEACHING, AND A SAMPLE ATTENDANCE RECORD. A REQUIRED TEXTBOOK (VT 000 697) IS AVAILABLE. THIS MANUAL IS AVAILABLE FOR $2.50 FROM OHIO TRADE AND INDUSTRIAL EDUCATION SERVICE, INSTRUCTIONAL MATERIALS LABORATORY, THE OHIO STATE UNIVERSITY, 1885 NEIL AVENUE, COLUMBUS, OHIO 43210. (JK)

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EMERGENCY VICTIM CARE AND RESCUE

DIVISION OF VOCATIONAL EDUCATION, STATE DEPARTMENT OF EDUCATION, COLUMBUS OHIO

Instructor's Manual

EMERGENCY
AMBULANCE

VT004066

EMERGENCY VICTIM CARE AND RESCUE

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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INSTRUCTOR'S MANUAL

OHIO TRADE AND INDUSTRIAL EDUCATION SERVICE

DIVISION OF VOCATIONAL EDUCATION
STATE DEPARTMENT OF EDUCATION
COLUMBUS, OHIO

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Preface

The State Department of Education has been instrumental in providing trade and industrial training to the citizens of Ohio since 1918, originally through its State Board for Vocational Education and presently through the Trade and Industrial Education Service of the Division of Vocational Education. Its purpose has been to prepare young men and women for employment in all types of industrial and service work, as well as to upgrade adult workers for greater efficiency in their chosen field.

Ohio can be truly proud of the vocational instruction provided to local communities in fire service training. This training has undoubtedly been responsible for saving many lives and preventing much property loss in the state. Emergency and Rescue Squad training has been developed to further serve the citizens of Ohio by providing well-qualified persons to deal with emergency situations. The personnel trained may be members of fire departments, police departments, or other agencies who are involved in the emergency treatment and rescue of people.

This manual is designed to serve as a guide for the emergency and rescue squad instructor. It includes the necessary teaching guides, lesson plans, and teaching methods to insure the proper presentation of the skills and related technical information necessary for Emergency Victim Care and Rescue.

Martin Essex, Superintendent of
Public Instruction

Byrl R. Shoemaker, Director of
Vocational Education

Foreword

The Ohio Trade and Industrial Education Service, Division of Vocational Education, State Department of Education, has taken an active part in the training of fire department personnel since 1939. Through the training and utilization of part-time instructors, the Trade and Industrial Education Service has been able to make fire department training available to all fire departments in the state. More recently a similar program has been developed for training emergency squad personnel in victim care and rescue procedures.

The importance of adequate training for emergency squad personnel, in rescue procedures and victim care beyond first aid, has been obvious for some time. International as well as national medical and rescue associations have expressed a dire need for a solution to this training problem.

In 1959 the Ohio Trade and Industrial Education Service published an Emergency and Rescue Squad manual as part of its training program. This text was completely revised in 1965. This major revision incorporates the new medical findings about closed chest heart compression, artificial respiration, mechanical resuscitation, care of the laryngectomy, and many others.

This Instructor's Manual is correlated with the revised text to provide the necessary instructional material which will serve as an up-to-date and comprehensive source of information. Included are the latest practices and techniques of Emergency Victim Care and Rescue.

It is our sincere desire that the Emergency and Rescue Squad personnel, fire-fighters, police departments and private ambulance attendants, throughout the State will realize the ultimate benefits to be gained by use of this training.

Harry F. Davis, Supervisor
Trade and Industrial Education Service

Acknowledgment

The Emergency Victim Care and Rescue text contains the acknowledgment to the Trade and Industrial Education Services staff personnel, the State Advisory Committee, Educational Institutions, Fire Associations, Organizations, and Manufacturers who made a contribution to the text with which this Instructor's Manual is correlated.

Acknowledgment for the content of this Emergency Victim Care and Resuce Training Instructor's Manual is extended to Rocco V. Morando, Coordinator, Emergency and Rescue Squad Training, Trade and Industrial Education Services, The Ohio State University.

Special mention is extended to the staff of the Instructional Materials Laboratory, Trade and Industrial Education Services; and to Wilbur F. Stover Consultant, Instructional Materials Laboratory, for directing and coordinating the development and production of this manual.

Harry F. Davis
Supervisor
Trade and Industrial Education Services

To the Instructor

The Emergency and Rescue Squad Training program consists of the following courses:

EMERGENCY VICTIM CARE - 30 Hours - referred to as Course "A"
VICTIM RESCUE - 20 Hours - referred to as Course "B"
HEART-RESUSCITATION - 12 Hours - special course consisting of:
- Care of the Coronary Victim
- Manual Resuscitation
- Mechanical Resuscitation
- Closed Chest Heart Compression

The text "Emergency Victim Care and Rescue" must be used by all learners in Courses "A" and "B".

This Instructor's Manual consists of a series of Teaching Guides which were prepared to serve as a plan or roadmap for the instructor when utilizing the group instructional method in teaching these courses. The Teaching Guides are an indispensable aid to the new instructor and will serve as a valuable outline to the experienced instructor. Space is provided in the left column on each page of the Teaching Guides for additional notes which you may desire to add.

ORGANIZATIONAL MEETING

Prior to teaching the first session of any course, you, as the instructor, should meet with the Squad or Department officers to determine the following:

1. The type of vehicle or apparatus
2. Equipment carried, make of resuscitator, etc.
3. Community survey, farm, industrial, freeways, rivers, lakes, hospitals, doctors, etc.
4. Qualified competent personnel who may assist in group practice sessions, such as backboards, resuscitation evolutions, ropes and rigging, etc.

This type of pre-planning will insure that your instruction will be most meaningful and offer maximum value.

PROPER PREPARATION

Each teaching guide is subdivided into the "four step" method of instruction, as illustrated on page xiv of this manual. In presenting each teaching unit contained in each teaching guide, utilize the four step method, namely:

Preparation Step; Presentation Step; Application or Tryout Step; and Checking and Follow-Up Step. Utilizing this method of instruction will result in the best possible instruction. In group instruction situations the following suggested procedures have proven quite successful and it is recommended that the instructor consider them carefully:

1. The instructor should provide or make necessary provisions for materials, equipment and supplies, prior to the class session.

2. Introduce the lesson (Step I) in an interesting and inspiring manner.

3. Present the lesson (Step II) utilizing the teaching aids as listed in each *Teaching Guide*, and any others which will assist in effectively teaching the content. Each instructor is encouraged to develop specialized teaching aids for his instructional use.

4. Have learners perform and practice (Step III) the various evolutions and skills that are applicable, as indicated in the Teaching Guide. This performance and practice will serve not only as a valuable aid to the learner, but also indicate to the instructor how well the lesson was taught.

5. Reteach any portion of lesson that was not thoroughly understood.

THE CLASS SESSION

The class session should run smoothly and follow a definite prearranged pattern or plan. The following suggested procedure has proven quite successful:

1. Take attendance and make announcements.

2. Instructor presents the lesson as outlined in the Instructor's Manual. The step-by-step procedure should be followed so that all "key" points will be covered.

3. **Have learners participate by practicing those evolutions or skills indicated in the Teaching Guide.**

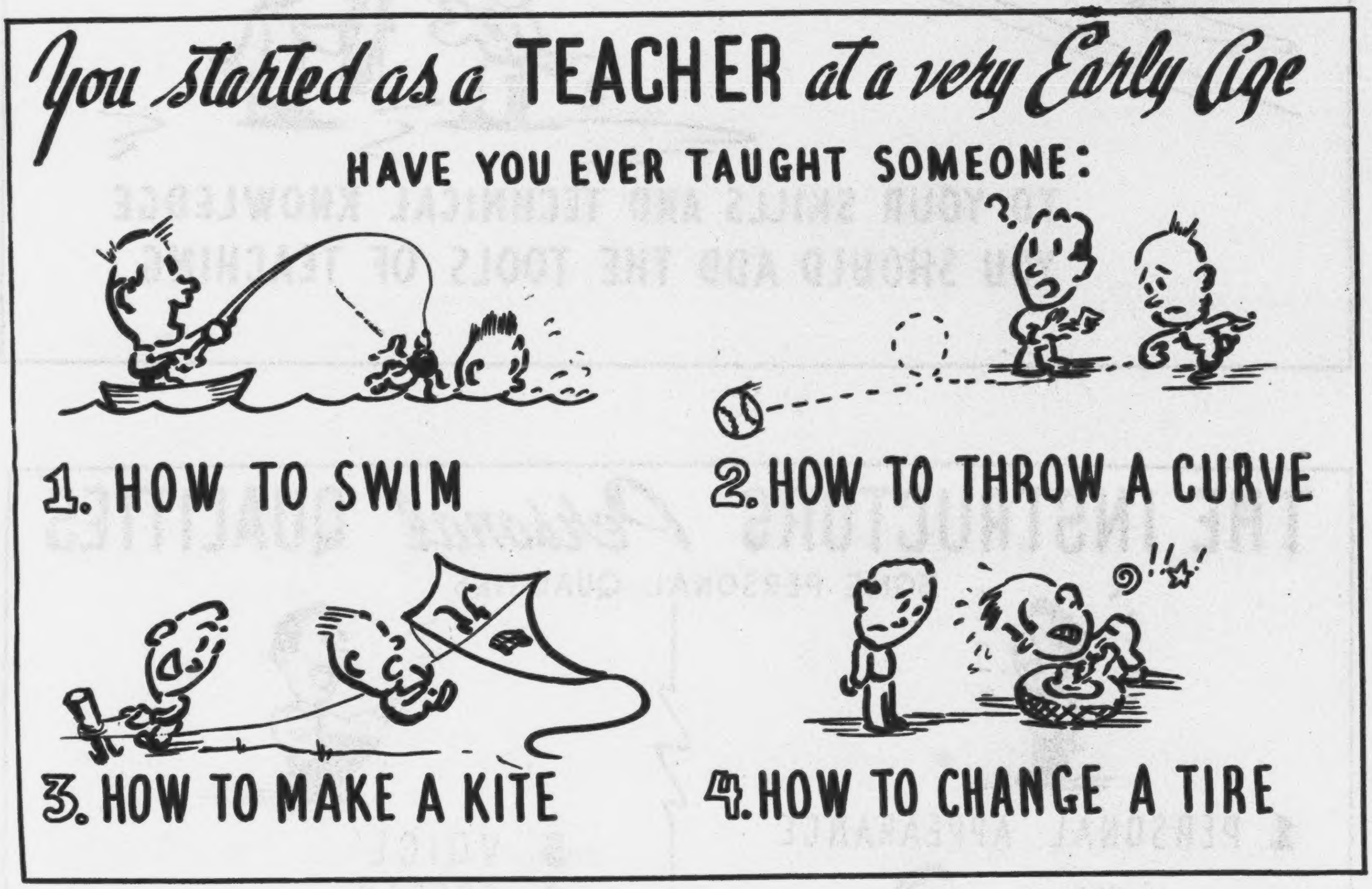
4. **Answer learners' questions and discuss items not clearly understood.**

5. **Announce topic for next class session and make assignments, as appropriate, including any necessary materials or equipment the learners are to bring to the next class.**

6. **Plan to leave suggestions in writing with the department, after each session, that will tend to increase the Squad's efficiency.**

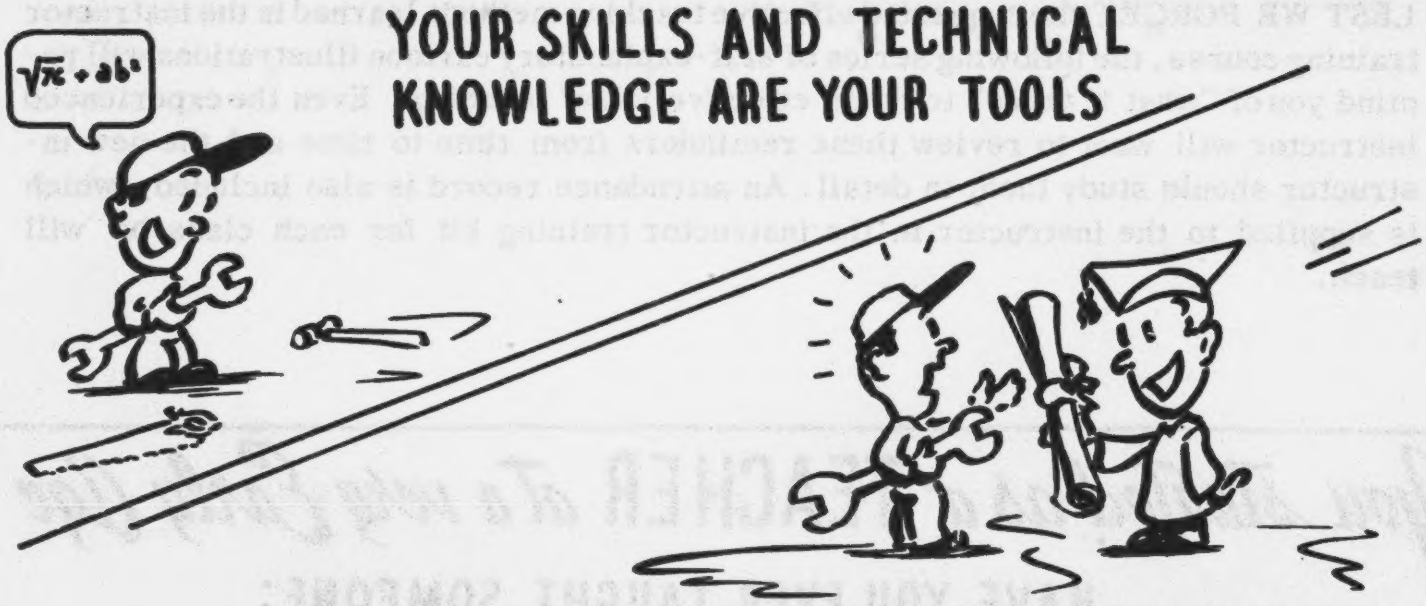
SUGGESTIONS FOR TEACHING

LEST WE FORGET the suggested effective teaching methods learned in the instructor training course, the following series of self-explanatory cartoon illustrations will remind you of "what it takes" to do an effective job of teaching. Even the experienced instructor will want to review these reminders from time to time and the new instructor should study them in detail. An attendance record is also included, which is supplied to the instructor in the instructor training kit for each class he will teach.


You started as a TEACHER at a very Early Age
HAVE YOU EVER TAUGHT SOMEONE:
?
1. HOW TO SWIM
2. HOW TO THROW A CURVE
!!
3. HOW TO MAKE A KITE
4. HOW TO CHANGE A TIRE

TEACHING *as a* NEW JOB

YOUR SKILLS AND TECHNICAL KNOWLEDGE ARE YOUR TOOLS



TO YOUR SKILLS AND TECHNICAL KNOWLEDGE YOU SHOULD ADD THE TOOLS OF TEACHING.

THE INSTRUCTORS *Personal* QUALITIES

SOME PERSONAL QUALITIES

1 PERSONAL APPEARANCE

2 COURTESY

3 SELF CONTROL

4 TACT

5 VOICE

6 SPEECH

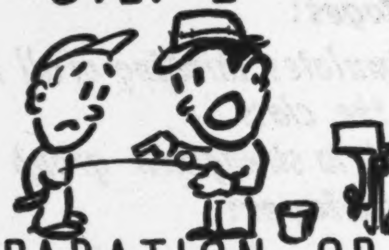
7 CHEERFULNESS

8 ENTHUSIASM

YOUR PERSONALITY REFLECTS YOUR PERSONAL QUALITIES

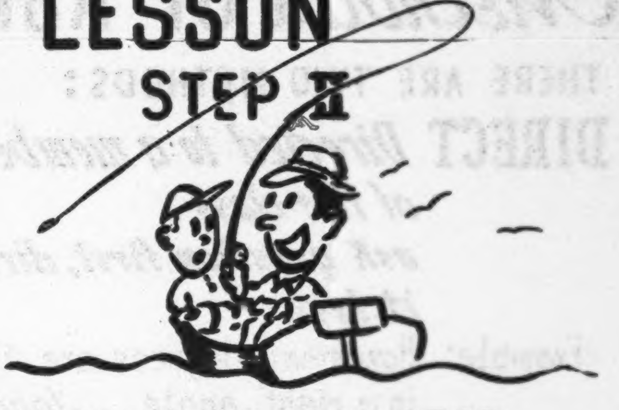
The FOUR STEP LESSON

STEP I



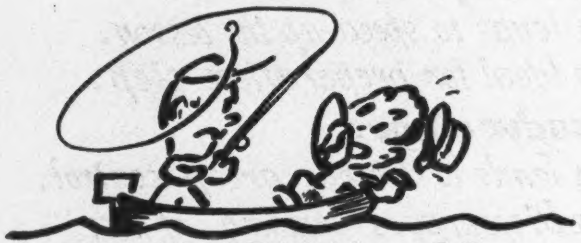
PREPARATION OR
INTRODUCTION STEP.

STEP II



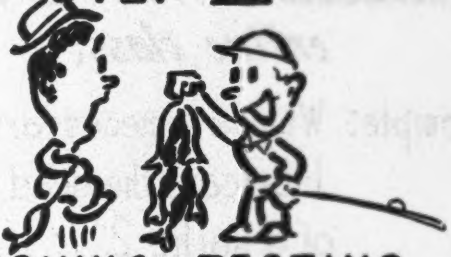
PRESENTATION STEP.

STEP III



APPLICATION OR
TRY OUT STEP.

STEP IV



CHECKING TESTING
and FOLLOW UP STEP.

KINDS OF *Oral* QUESTIONS

INFORMATION QUESTIONS– *call for information.*

Example: *What materials are used in this extinguisher, John?*

THOUGHT QUESTIONS– *require thinking and judgement.*

Example: *Why is it dangerous and unsafe to use a soda acid extinguisher on an electrical fire?*

SUGGESTIVE QUESTIONS– *suggests answer "yes" or "no" or directs thinking.*

Example: *Is it true that this extinguisher derives its name from the fact that soda and acid are used to charge it?*

Example: *Now since we have taken care of the soda solution, what else goes in the shell?*

COMPARISON QUESTIONS– *calls for all kinds of comparisons.*

Example: *Compare stellite and high speed steel as a cutting tool.*

Methods OF ASKING QUESTIONS

THERE ARE TWO METHODS:

1 **DIRECT** *Directed to a member of the class: ask question first, direct it last.*

Example: How many degrees are there in a right angle, *John?*

2 **OVERHEAD** *Directed to the entire class.*

Example: Why is it necessary to lubricate the dead center of a lathe?

DIRECT METHOD

Advantages:

1 *Stimulates thinking of all members of the class.*
2 *Tends to strengthen group control.*

Disadvantages:

1 *Tends to slow up the lesson.*
2 *Tends to destroy confidence of timid learners.*

OVERHEAD METHOD

Advantages:

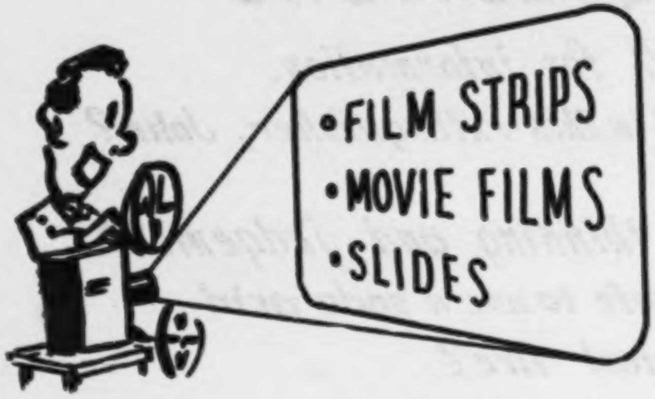
1 *Tends to speed up the lesson.*
2 *Ideal for preparation step.*

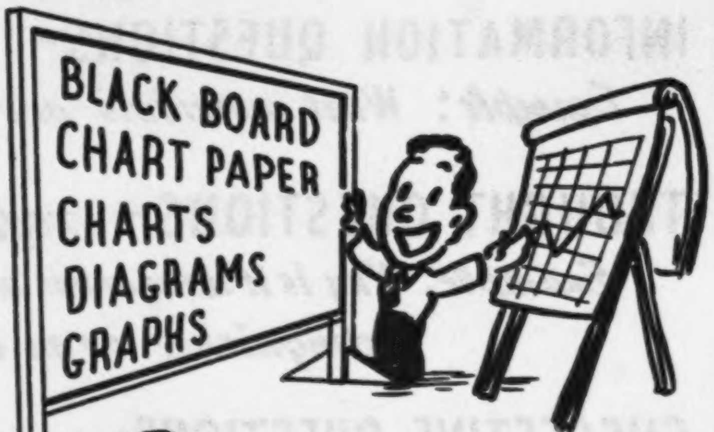
Disadvantages:

1 *Tends to destroy group control.*
2 *Discourages thinking of less diligent learners.*

FOLLOW THE RULES ON ORAL QUESTIONS

TEACHING AIDS

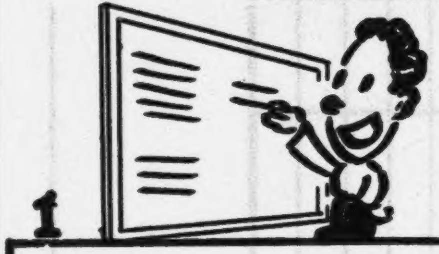




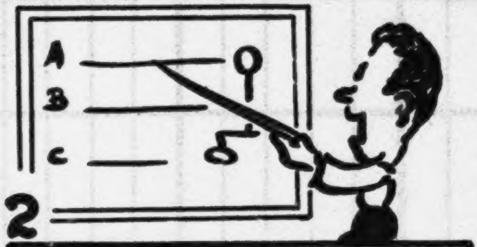
MODELS *and* MOCK-UPS

INSTRUCTIONAL MATERIALS
- INSTRUCTION SHEETS
- TEXT BOOKS
- SERVICE MANUALS

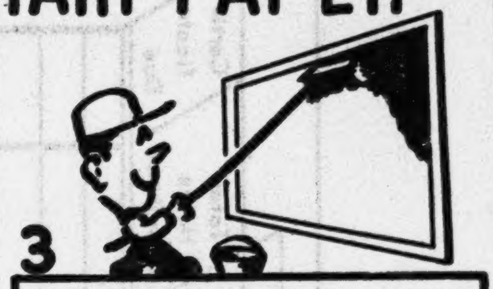
THE BLACKBOARD OR CHART PAPER



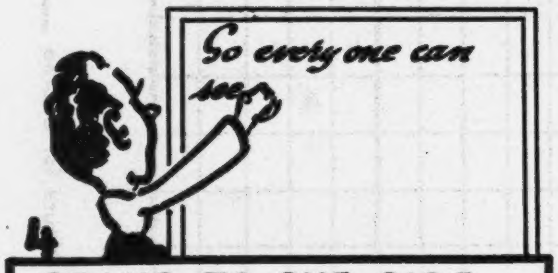
WRITE LEGIBLY *and* ARRANGE NEATLY.



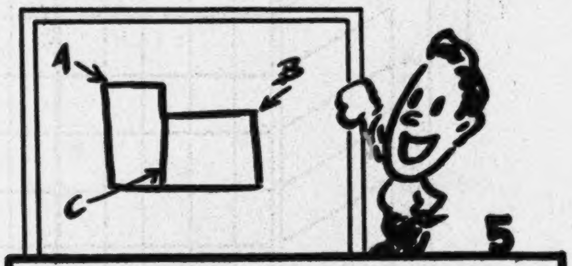
STAND TO ONE SIDE WHEN USING THE POINTER.



KEEP BLACKBOARD CLEAN.


So every one can see.
4

STAND TO ONE SIDE WHEN WRITING.



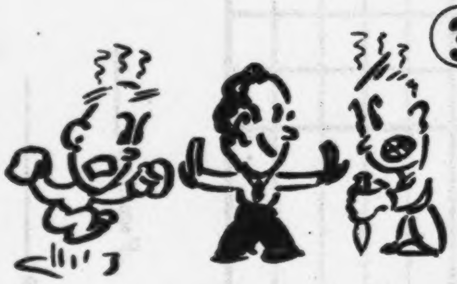
USE FOR SKETCHES DIAGRAMS OUTLINES *etc.*

YOUR *Management* RESPONSIBILITIES

① GOOD HOUSEKEEPING ⇨

② HEAT, LIGHT AND VENTILATION ⇨

③ SAFETY ⇨



⇦ ④ GROUP CONTROL

⇦ ⑤ RECORD KEEPING

⇦ ⑥ SEATING

OHIO TRADE AND INDUSTRIAL EDUCATION SERVICES
ADULT EXTENSION CLASS

ATTENDANCE RECORD

Course ______________________ City ______________________

	ENROLLMENT			DATE OF MEETINGS																				
No.	Last Name —— First Name	M	F																				Total Hours Attendance	Certificate Due
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
20																								

Total Enrollment _____ Females _____ Number of Class Sessions _______ Total Hours for Course _______

Average Attendance per Meeting _________ Number of Hours per Session _______ Signed ______________________

(Instructor)

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TEACHING GUIDE # 1
LESSON PLAN #1

VEHICLES–EQUIPMENT–PERSONNEL–OPERATIONS DRIVING–CONTROLLING THE SITUATION

DESIRED RESULTS:

1. To acquaint the learner with the necessary fundamentals related to squads and effective squad operations.
2. To stress upon the learner the importance to have a working knowledge of all the equipment and supplies carried on their sound vehicle.
3. To present the required topics before responding and/or initiating victim care and rescue.

EQUIPMENT AND SUPPLIES:

1. Chalkboard - chalk and eraser
2. Registration cards (Discretion of instructor)
3. Squad manual (EVCRM) for each learner
4. Notebook (to be purchased by learner)
5. Squad vehicle - for demonstration in step III of lesson

REFERENCE:

EVCRM - Chapters 1-6, pp. 1-37.

STEP I - INTRODUCTION OF LESSON:

The squadman who has a general knowledge of the various types of equipment and vehicles used in the emergency and rescue service will be capable of utilizing the equipment and vehicle of his particular squad more intelligently and effectively. Recall, that a tool or piece of equipment is only as good as the man using it.

The goal of all squadmen is to give the best in rescue victim care. An effective plan of operations to dispatch apparatus and trained personnel to the scene of accident or serious illness will achieve the ultimate in reaching this goal.

(Note to instructor) All of the information in this lesson may not be directly applicable to the particular squad or its squadmen, however, it is desired that a working knowledge be presented.

STEP II - PRESENTING THE LESSON:

A. EMERGENCY & RESCUE VEHICLES - CHAPTER 1

1. **Local needs for squad service**
    - a. **Discuss preliminary factors - page 1**
2. **Types of emergency & rescue vehicles**
    - a. **Ambulance**
    - b. **Light rescue (panel truck)**
    - c. **Heavy rescue (van type)**
3. **Specifications**
    - a. **Weight of chassis**
    - b. **Weight of equipment**
    - c. **Hauling weight (boat and trailer)**
    - d. **Horsepower**
    - e. **Type of wheels (single or duals)**
    - f. **Load limit**
    - g. **Used vehicles (mechanical and physical condition)**
4. **Care and maintenance of a vehicle**
    - a. **Discuss the need for care and maintenance. Elaborate on the following items, noting that other items can be added by the local department in accordance with existing policies, rules, and regulations.**
        - (1) **Brakes and their related parts.**
        - (2) **Gasoline and oil levels - replenish and check for leaks.**
        - (3) **Tires, check for foreign bodies, cuts, and air pressure.**
        - (4) **Check all gauges and instruments on dash and control panels.**
        - (5) **Battery, especially on radio-equipped vehicles.**
        - (6) **Radiator, check water level.**
        - (7) **Safety belts.**
        - (8) **Lights - head, tail, stop, directional, dash, dome, and warning lights.**
        - (9) **Steering mechanism.**
        - (10) **Mirrors, rear and side(s).**
        - (11) **Siren - proper operation.**
        - (12) **Cleanliness of vehicle, interior and exterior.**
    - b. **Discuss the importance of daily, weekly, and monthly inspection reports.**
        - (1) **Responsibility and obligation of the men assigned this duty.**
        - (2) **Officer in charge to direct work and inspect results.**
            - (a) **Place different levels of responsibility where they belong.**

B. EQUIPMENT - CHAPTER II

Note: The following list does not include every tool or piece of equipment that might be used; additional items pertinent to this operation can be added in accordance with local needs. The items chosen and the quantities must be in keeping with the type and size of vehicle.

1. **Life-saving tools and equipment**
    - a. **Fracture equipment**
        - (1) **Fracture kit (page 11)**
        - (2) **Traction splints**
        - (3) **Blanket roll, splint**
    - b. **Oxygen - administering equipment**
        - (1) **Straight inhalator**
        - (2) **Combination resuscitator, inhalator, aspirator, with 50 ft. extension**
        - (3) **Two extra tanks for each**
    - c. **First aid kits**
        - (1) **Squad first aid kit (Fig. 1, page 12)**
        - (2) **Large commercial (Fig. 2, page 12)**
    - d. **Blankets**
        - (1) **Wool blanket for wrapping victim**
        - (2) **Fire blanket - victim protection**
    - e. **Sheets**
        - (1) **Sterile sheets for wrapping victim**
        - (2) **Rubber sheets - protect cot, blankets**
    - f. **O.B. kit (obstetrical)**
    - g. **Stretchers**
        - (1) **Ambulance type**
        - (2) **Army canvas**
        - (3) **Collapsible**
        - (4) **Adult backboard and footrest**
        - (5) **Child backboard and footrest**
        - (6) **Stokes basket**
    - h. **Gas mask**
        - (1) **Self-contained**
        - (2) **Oxygen generating**
    - i. **Special protective clothing**
        - (1) **Asbestos or heat resistant suits**
        - (2) **Asbestos or heat resistant gloves**
        - (3) **Ammonia suits**
        - (4) **Miscellaneous**
            - (a) **Cover-alls**
            - (b) **Shop coats**
            - (c) **Arm bands for identification**
            - (d) **Cloth face mask - (contagious diseases)**

2. Rescue tools and equipment

Note: Describe and explain use briefly.

- a. Electrical safety equipment
    - (1) Rubber gloves and protectors (Fig. 9-10)
    - (2) Wire cutters (Fig. 11)
    - (3) Firemen's cutters (insulated)
    - (4) Wire holding stick (Fig. 12)
    - (5) Pipe wrench (large)
- b. Striking tools
    - (1) Axes (pickhead, flathead, hand, etc.)
    - (2) Hammer (sledge, rubber head, mallet, etc.)
    - (3) Picks (hammer head, mattack, plain, etc.)
- c. Cutting tools
    - (1) Wood cutting (electric or manual saw, air hammer, chisel)
    - (2) Masonry cutting (electric or manual saw, air hammer, chisel, star drill, etc.)
    - (3) Metal cutting (electric saw, hack saw, cold chisel, tin roof cutter, bar cutter, oxy-acetylene torch, tin snips, finger-ring cutter, bolt cutters)
- d. Battering tools
    - (1) Battering ram
    - (2) Ball on chain
- e. Prying and lifting tools
    - (1) Claw tool
    - (2) Door opener
    - (3) Hux bar
    - (4) Crow bar
- f. Boring and drilling tools
    - (1) Electric
    - (2) Breast
    - (3) Brace and bit
    - (4) Metal and wood drills in assorted sizes
- g. Hoisting, pulling, and lifting equipment
    - (1) Assorted rope
    - (2) Block and tackle
    - (3) Sheave block
    - (4) Pike pole
    - (5) Ratchet jack
    - (6) Hydraulic jack (Fig. 13)
    - (7) Log chain
    - (8) Cable
    - (9) Hydraulic rescue kit

- h. Cutting torch
  - (1) Oxy-acetylene
- i. Ladders
  - (1) Rope
  - (2) Collapsible
  - (3) Extension
- j. Lighting equipment
  - (1) Flashlight (one per man)
  - (2) Hand lamp
  - (3) Portable electric generator (Fig. 15)
- k. First-aid firefighting appliances
  - (1) Pressure-type water extinguishers (class "A" fire only)
  - (2) Soda-acid (class "A" fire only)
  - (3) Foam (class "B" fire)
  - (4) Carbon dioxide (class "B" & "C" fires)
  - (5) Dry powder (class "B" & "C" fires)

3. Miscellaneous tools and equipment
   - a. The following list of tools and equipment does not fall directly into the previous classifications, but may prove to be important in equipping your emergency and rescue squad.
     - (1) Salvage covers
     - (2) Fire helmets
     - (3) Rubber body wrapper
     - (4) Ditch jacks
     - (5) Rescue harness
     - (6) Life jackets
     - (7) Small hose roller
     - (8) Long and short handled shovels
     - (9) Walkie-talkie radios (Fig. 16)
     - (10) Portable oxygen indicator (Fig. 17)
     - (11) Well-equipped tool box
     - (12) Spanner and hydrant wrenches
     - (13) Shut-off keys (Gas, water, etc.)
     - (14) Lyle gun
     - (15) Tool kit (small tools)
     - (16) Flags and flares
     - (17) Brooms and mops
     - (18) Atomosphere testing equipment
     - (19) Explosimeter (Fig. 18)
     - (20) Carbon monoxide tester (Fig. 19)
4. Special heavy equipment
   - a. Some rescue operations require the use of the following heavy-duty mobile equipment.
     - (1) Power shovels
     - (2) Back hoes

(3) Scrapers
(4) Bulldozers
(5) Cranes
(6) Dump trucks
(7) Highway wreckers

The use of this heavy equipment requires specially trained and qualified operators. A squadman can not be expected to be familiar with their use and operation.

It is wise to contact the owners or operators of such equipment in the squad's area of service, asking for their cooperation in the event that a sudden emergency creates a need for their services.

The control of a cooperative rescue operation is important and must not be overlooked at the development stage. It must be established at the inception that the person who commands the department or emergency unit will have complete authority to request and command auxiliary equipment when it is needed. There is no time for "red tape" during an accident or disaster when life depends on efficient dispatching and control of equipment.

C. PERSONNEL - CHAPTER III

The successful operation of an emergency or rescue squad depends on every man assigned to it. The saving of life is a serious business in itself and it should be handled by trained and qualified personnel. A small amount of first aid is not enough to assure the safety and welfare of a victim. It should be mandatory that only personnel who have successfully completed first aid training offered by a qualified agency and have passed the state emergency and rescue training course, be considered for this important duty.

(Instructor's note) ("Even though the pre-requisite of advanced first aid is no longer required, it should be strongly recommended and emphasized that squadmen avail themselves of this training.")

1. Qualifications

a. The following items will serve as a guide to determine the over-all capability of each person to be considered as a squadman.

(Instructor to elaborate on the following) (Pgs. 21-23)

(1) He must have volunteered for the job.

(2) He must be available. (For volunteers) (Omit when teaching paid departments)

(3) He must be dependable.
(4) He must have a good reputation.
(5) He must present a good appearance.
(6) He must be cooperative.
(7) He must have a pleasant personality.
(8) He must be definitely interested in the job.
(9) He must have initiative.
(10) He must be cool, level-headed, and have the ability to exercise common sense.
(11) He must have an aptitude for training.
(12) He must have leadership ability.
(13) He must be in good health and physical condition.

2. Complement of emergency and rescue units
   a. To determine the number of officers and men who are to man an emergency or rescue squad, consideration must be given to:
      (1) Size of area served by squad
      (2) Available manpower
   b. The minimum complement for each type vehicle to insure safety and efficiency are:
      (1) Ambulance - 1 officer - 1 or 2 men
      (2) Light rescue - 1 officer - 2 or 3 men
      (3) Heavy rescue - 1 officer - 5 or 6 men
      (Instructor to discuss reasons for these numbers) (Page 23)

D. OPERATIONS - CHAPTER IV

1. Alerting system
   a. The emergency must be identified so that both fire-fighting and emergency personnel will immediately recognize its nature.
   b. Response must be rapid, only by the personnel assigned to the emergency or rescue unit.
   c. Unnecessary confusion and disorder which delay response to this type of alarm must be avoided.
2. Types of alerting systems
   a. Sirens - different locations in community
   b. Sirens - coded
   c. Air horns - coded
   d. Radio in each squadman's home
   e. Telephone overrides
   f. Phone system - call men individually
   (Instructor: Which type is used by the squad you are teaching? Discuss.)
3. Response
   a. Facilitate an efficient and orderly "all-out" by personnel assigned to squad apparatus.

b. Only members assigned to these units respond.
c. Avoid cluttering highways and adding confusion to local traffic with excess private vehicles.
d. Maintain a "stand-by" system for volunteer units where additional men "lay back" at station or headquarters in the event of additional calls on the same alarm or other alarms.

4. Communications
   a. Some type of communication system should be incorporated in the over-all operation of emergency and rescue squad units. On-the-spot contacts to call directly from the unit for additional equipment, personnel, law enforcement agency, etc.
   b. Modern squads utilize:
      (1) Two-way radio
      (2) Walkie-talkie
      (3) Mobile telephone
5. Coding calls
   a. Information transmitted over a two-way radio should be coded, especially when information is related to victim's condition i.e., "code signal 95" = victim critical. If victim were to hear squadman verbally state his condition as critical, it might cause his shock to become more severe.
   b. Additional code signals can be used to indicate other victim conditions.

E. SAFE DRIVING PRACTICES - CHAPTER V

1. When dealing with the problem of "safe speeds" vs. "excessive speeds," definite facts must be included.
   a. The squadman's physical and mental ability to drive the vehicle
   b. The condition and type of vehicle used
   c. The weather
   d. The road conditions
2. Drivers responsibility
   a. The driver of an emergency vehicle is responsible for the safe operation of that vehicle.
   b. It is necessary for him to understand the limitations involving the use of the red warning lights and siren.
3. Red light
   a. The flashing red light is of more value as a warning device to oncoming traffic than it is when used to alert drivers of vehicles being approached from the rear.
   b. When no visual obstruction exists, the red flashing light is often more effective than the siren.
   c. The use of driving lights in the daytime assists greatly.

4. Siren
   a. An excellent warning device
   b. Limitations:
      (1) Three times more projection straight ahead than to either side or rear.
      (2) A person with normal hearing, seated in a car approximately 1,000 ft. straight ahead with the driver's window open, can hear the siren.
      (3) Variation of noises and sound obstacles (radios, trucks, buses, etc.) will alter the distance.
      (4) When the listener is at a right angle to the path of the emergency vehicle, the sound is reduced approximately two-thirds.
   c. Techniques and cautions:
      (1) Unless automatically controlled, the siren should be brought alternately from low pitch to high pitch.
      (2) Varying pitch will attract more attention.
      (3) Many people are deaf to a certain tone.
      (4) Siren and red lights do not guarantee safe passage at dangerous intersections.
      (5) Driver of emergency vehicle is required by law to exercise due regard for the safety of all persons when proceeding through a red traffic light or stop sign.
      (6) Use of siren should be restricted to genuine emergencies only.
      (7) When approaching a vehicle from the rear, siren should be actuated well in advance to avoid startling the motorist.

5. Driving an emergency vehicle
   a. Emergency vehicle drivers should exercise caution when passing vehicles.
      (1) Especially when necessary to cross center lines.
   b. No emergency vehicle should pass another emergency vehicle until an all clear signal is received.
   c. Safe following distance is 500 feet.
   d. Special caution is required when two or more units are responding to the same alarm together.

6. Speed in relation to "reaction distance," "breaking distance," and "stopping distance."
   a. "Speed" - miles per hour a vehicle travels.
   b. "Reaction distance" - distance vehicle will travel while driver is transferring his foot from the accelerator to the brake pedal.
   c. "Braking distance" - the distance a vehicle will travel after brakes have been applied.
   d. "Stopping distance" - sum of reaction distance plus braking distance.

e. Distances will vary due to:
  (1) Mental and physical alertness of the driver.
  (2) Speed, type and condition of vehicle.
  (3) Condition of brakes, tire size and weight of vehicle.
  (4) Condition and type of road surface.

f. Example of stopping distance
  (1) At 40 M.P.H. a vehicle is traveling 59 feet per second--reaction distance is 44 feet--braking distance is 88 feet--
    (a) Stopping distance at 40 M.P.H. equals 132 feet.
  (2) At 60 M.P.H. stopping distance under normal conditions will be 264 feet.

  Instructor note: Chap. 26 covers legal aspects of operating emergency vehicles in more detail.

F. CONTROLLING THE SITUATION - CHAPTER VI

The squadman's first responsibility in any emergency is to the victim. Since squadmen are often the first trained personnel to arrive at an emergency it is sometimes necessary for them to do other things which are not victim care in order to perform their function adequately without endangering their own safety and the safety of others.

1. Highway accidents
   - a. In certain situations a victim should receive "on-the-spot" emergency care before being moved for any purpose.
   - b. Warning lights on emergency vehicle offer some protection to squadmen and victim from oncoming traffic.
   - c. When permissable move victim safely from the danger zone.
   - d. Definite procedures will be decided for each individual case by the squadman or officer-in-charge.
   - e. Squadmen should never deviate from the "victim care" as outlined in the text when considering whether to move the victim to a safer area.

2. Flags and flares

   (Instructor to refer trainees to section 4513.28 R.C. of Ohio, page 33 in text.)
   - a. Flags, flares or warning signals shall be placed forty-paces or approximately 100 feet both to the front and rear of vehicle involved on highway accident.
   - b. Emergencies near a curve or crest of a hill or places where the vision of oncoming traffic is obstructed, the signals should be placed to give ample warning.

3. Clean-up
   - a. The Ohio Driver's Manual states:

     "Any person removing a wrecked or damaged vehicle from a highway shall remove any glass or other injurious substance dropped upon highway from such a vehicle."

This is not to imply that the squadmen are responsible for said removal, but only to point out with whom this responsibility lies.

b. Some of the most common substances found in a clean-up situation are: (Instructor to elaborate on each.)
   (1) Gasoline
   (2) Glass
   (3) Blood
   (4) Miscellaneous, such as milk, farm produce, freight, etc.

c. The use of water in freezing weather for clean-up requires that salt, sand or other like substance be used to make the area safe for motorists and pedestrians.

4. Cooperation by preplanning

a. Rescue squads in many cases request cooperation from local police, sheriff's office, highway patrol and the highway department.

b. Squad personnel should attend to the emergency as it concerns first-aid and rescue and let the law enforcement personnel handle the other people and traffic problems.

c. Preplanning should be done with the top officials of the concerned agencies. At this level a plan can be developed before the emergency rather than at the scene of an emergency. Definite agreements can be made which will not be contradicted later.

d. Refer to Figure 1, page 35, read and discuss caption.

5. Home situations

a. Squadmen must have the ability to handle the relatives and friends of the victim to the end that they will not interfere with the victim's care or the squadmen.

b. There is no set rule to use to cope with this problem; however, the following example may prove to be helpful.
   (1) Husband has heart attack. His wife is hysterical.
   (2) Take wife to another room.
   (3) Ask her questions to keep her mind occupied.
      (a) Has your husband had these attacks before?
      (b) Is he taking medicine? If so, ask to see it.
      (c) What is his medical background?
      (d) Who is his doctor?
      (e) What is his parents' medical background?
      (f) How many children do you have?
      (g) How old are they?
      (h) What is your husband's age?

c. A word of sympathy and encouragement is well worth while.

d. Do not blame or ridicule a person. Your job is to help him cope with his feelings.

6. Cooperation of victim
    a. The victim must be put at ease and must have confidence in the squadmen.
    b. The victim must be reassured and the squadmen should explain what they are doing or going to do.
    c. Protect the victim from the prying eyes of curious bystanders. This will prevent additional embarrassment to victim. (Instructor: Give example of splinting woman's leg under a blanket.)
7. Cooperation with hospital personnel
    a. If there is a working agreement between the emergency squad and the hospital emergency room personnel, the care of the victim from the time he is first seen by the squad until the time he is admitted to the hospital will not be disrupted.
    b. The officer in charge of the squad should meet periodically with the emergency room supervisors; this will lead to a better understanding of the objectives of both groups.
    c. Prior notification to the hospital of the arrival of critical victims can be of great help.
    d. This can be accomplished by notifying squad dispatcher who in turn will notify hospital to prepare for said victim or victims.
    e. If victim is able to hear, the transmitting or radio conversation should be coded.
    f. Upon arrival at hospital tell the nurse what type of emergency you have and the suspected injuries.
    g. After lifesaving procedures are carried out and the victim is comfortable, the squadmen should give the nurse the following information:
        (1) The exact location from which victim was taken.
        (2) The type of accident.
        (3) The victim's condition from the time squadmen arrived until victim arrived at hospital.
        (4) The care given by the squad.
        (5) Whether the proper law enforcement agencies were notified.

STEP III - APPLICATION

1. Take the learner to the apparatus that is used by their squad.
2. Have each learner point out a particular part of the squad or piece of equipment, and have him inform the group of its application in the operation of their squad: i.e., this is our resuscitator - it is used on the non-breathing victim.
3. All attending should demonstrate to the instructor some part of the squad or its equipment.

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE #2
LESSON PLAN #2

PHYSICAL SHOCK

"The topics covered in this lesson, (teaching guides 2-3), have been incorporated into this course to maintain a consistency in the Trade and Industrial Education Services. That is, all areas of training shall be self-sustaining and not dependent on certain pre-requisites."

Harry F. Davis, State Supervisor
Trade and Industrial Education Service

DESIRED RESULTS:

1. To impress upon the learner the importance of recognizing symptoms of shock.

EQUIPMENT AND SUPPLIES:

1. Chalkboard - chalk & eraser
2. Blankets - to demonstrate conservation of body heat

REFERENCE:

The Bureau Mines First Aid Manual. U.S. Department of the Interior

STEP I - INTRODUCTION OF LESSON:

Physical shock is defined to be a state of collapse or prostration that interferes with the normal action of the heart, respiration and circulation; due to an improper balance within the sympathetic nervous system which controls the vital functions of the body.

Shock occurs in some degree in all cases of injury or serious illness. It may be so slight as not to be noticed, it may develop rapidly, or it may not develop until hours later.

The most important thing that occurs in shock is a drop in blood pressure. The sympathetic nervous system loses control over certain small blood vessels and capillaries. The blood vessels and capillaries within the body and abdominal cavity dilate and become engulfed with blood. This causes a large amount of blood to be removed from body circulation and results in a drop in blood pressure and limits the volume of blood passing through the heart and lungs.

STEP II - PRESENTING THE LESSON:

A. CAUSES OF PHYSICAL SHOCK

1. Severe or extensive injury
2. Severe pain
3. Bleeding
4. Burns
5. Electrical or gas accident
6. Certain illnesses
7. Poisoning
8. Extremes of heat or cold
9. Viewing own injuries or injuries to others.
10. Fright
11. Anger
12. Joy
13. Other

B. SYMPTOMS OF PHYSICAL SHOCK

1. Face pale, with anxious or dull expression
2. Eyelids droop, if open; eyes are dull and pupils dilated
3. Victim may be partially or totally unconscious
4. Skin is cold and covered with clammy sweat, particularly hands and forehead
5. Victim feels cold and may exhibit chills; temperature below normal
6. Pulse is weak and rapid
7. Breathing is shallow and may be irregular
8. Victim may act stupid and takes little interest in his surroundings
9. If internal bleeding is present, victim may be restless; if conscious, he may complain of clouded vision, dizziness and thirst
10. Victim may answer question slowly or may fail to comprehend
11. Nausea and vomiting often occur.

Any or all of the listed symptoms may be present or may develop gradually. Squadman will observe victim continuously to detect any change or additional symptoms.

C. SQUAD CARE OF SHOCK

1. Maintain open air passage and assist breathing with oxygen inhalation.
2. If possible victim should be placed flat on back with feet elevated (Positions for heart attack, stroke and head injuries describe in subsequent lessons.)

3. Conserve body heat
   a. Cover victim with blanket; stress importance of conserving heat by placing blanket under as well as over victim.
4. Fluids and/or stimulants if victim is conscious only
   a. Aromatic spirits of ammonia. One teaspoon in one-half glass of water. Given in sips and not to exceed the one-half glass during a 20 minute period.
   b. Coffee, tea or water can be substituted for the aromatic spirits of ammonia; if so, they should be as warm as victim can stand and should be given in sips, not to exceed one glass in a period of one hour
   c. Vomiting may occur if too much liquid is given to victim.

STEP III - APPLICATION

1. Have learners demonstrate how to put victim in shock position for the following, and tell why: head injury, poisoning, serious illness.
2. Ask questions and correct errors.

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period
2. Designate to whom learners can go for additional information

TEACHING GUIDE #3
LESSON PLAN #2

CONTROL OF BLEEDING

DESIRED RESULTS:

1. To instill in the learner the methods of controlling bleeding.
2. To stress the importance of the immediate control of all bleeding.

EQUIPMENT AND SUPPLIES:

1. Chalkboard - chalk and eraser
2. Cravat and compress bandages for each learner

REFERENCE:

The Bureau Mines First Aid Manual. U.S. Department of the Interior

STEP I - INTRODUCTION OF LESSON

The circulatory system consists of the heart, the arteries, the veins and the capillaries through which blood is carried to all parts of the body.

The heart is a hollow muscular organ, about the size of an individual's fist, located beneath the lower half of the sternum (breast bone). By its pumping action it keeps the blood circulating under pressure throughout the body.

The arteries carry blood from the heart to all parts of the body. The veins carry blood from the body back to the heart.

STEP II - PRESENTING THE LESSON

A. Interesting facts concerning blood and bleeding
   1. One-twelfth to one-fifteenth of the body weight is blood.
      a. Loss of two pints of blood by an adult is usually serious.
      b. Loss of three pints of blood may prove to be fatal.
      c. Cutting of the two major arteries in the neck (carotid) or arm (brachial) or leg (femoral) can cause hemorrhage that may be fatal in one to three minutes.
      d. Rupture of the major trunk artery of chest or abdomen (aorta) may cause fatal hemorrhage in less than thirty seconds.

B. Describe symptoms of bleeding from arteries, veins, and capillaries

- **1. Arteries**
  - **a. Bright red in color. (Explain)**
  - **b. Comes from wound in spurts. (Explain)**
- **2. Veins**
  - **a. Dark red in color. (Explain)**
  - **b. Comes from wound in steady flow. (Explain)**
- **3. Capillaries**
  - **a. Blood oozes from wound.**
  - **b. Usually not serious, clots easily.**

C. Describe methods of controlling bleeding

- **1. Direct pressure (Compress bandage)**
- **2. Digital pressure (Pressure points)**
- **3. Cold applications**
- **4. Elevation**
- **5. Tourniquet (Last resort)**

D. Locate pressure points on yourself and demonstrate digital pressure to learners

- **1. Pressure points are located at a point where the artery is close to the surface and can be compressed against a bone to restrict the flow of blood.**
  - **a. Temporal - side of head**
  - **b. Facial - located beneath lower jaw bone**
  - **c. Carotid - neck artery/jugular vein**
  - **d. Subclavian - deep behind collar bone**
  - **e. Axillary - armpit**
  - **f. Brachial - upper arm**
  - **g. Brachial - at inside of elbow**
  - **h. Radial and ulnar - at wrist**
  - **i. Femoral - at groin**
  - **j. Femoral - at thigh**
  - **k. Popliteal - back of knee**

E. Discuss use and application of tourniquets

- **1. Used as a last resort when other methods fail or in case of possible amputation and severe crushing injuries.**
- **2. When used it should be applied at a pressure point on arm or legs, depending on injured part.**
- **3. Never use material which may cut or injure area when applied.**
- **4. If tourniquet is used it should not be loosened or removed until victim is at hospital or other medical facilities, and then only by medical personnel.**
- **5. Always tag or mark victim as to location of tourniquet (i.e., mark T.K. on forehead with iodine swab)**

F. Internal bleeding
   1. Severe shock may be only factor to alert squadmen to this condition.
   2. Bleeding from lungs; coughed-up blood will be bright red and frothy.
   3. Bleeding from stomach, if recent, vomited blood will be bright red. If chronic, the vomited blood may resemble coffee grounds.

STEP III - APPLICATION

1. Have learner(s) demonstrate methods of controlling bleeding, direct pressure, pressure points, etc.
2. Ask questions and correct errors.

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Have learners break up into teams and practice methods described in the lesson.
3. Designate to whom learners can go for additional help or information.

TEACHING GUIDE #4
LESSON PLAN #3

EMERGENCY CHILDBIRTH

DESIRED RESULTS:

1. To acquaint the learners with the conditions surrounding childbirth.
2. To impress upon the learner that the decision must be made by them as to whether the expectant mother is to be transported to a hospital or to assist in the delivery in the home or at the particular scene.
3. A working knowledge of this subject is necessary, for a woman in labor and/or a new-born child can present many difficult situations.

EQUIPMENT AND SUPPLIES:

1. Chalkboard - chalk - eraser.
2. 16 mm. sound projector and screen
3. 4" x 4" gauze compresses
4. Demonstration doll if available
5. O.B. pack
6. Film - "Normal Childbirth"

REFERENCE:

EVCRM - CHAPTER 7, pp. 39 to 48 incl.

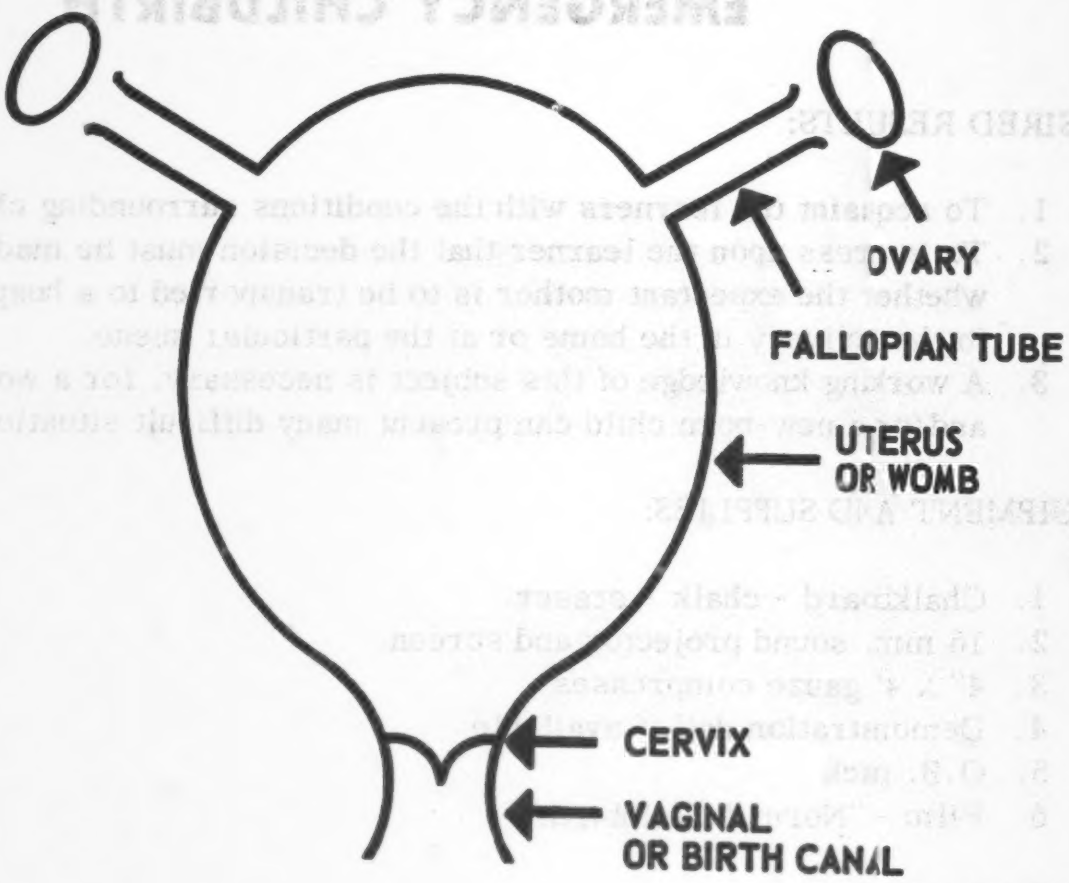
STEP I - INTRODUCTION OF LESSON:

Four paragraphs, page 39 - (normal deliveries)

STEP II - PRESENTING THE LESSON

A. Define and discuss briefly the following:
   1. Obstetrics: The care of the childbearing woman and her new-born baby. Obstetrics deals basically with three distinct periods.
      a. Pregnancy: The period from conception through labor and to the birth of the child.
      b. Labor: The expelling of baby and placenta.
      c. Puerperium: (Post delivery) Period during which female reproductive organs are restored to approximately their former size. Usually takes about six weeks.

B. Reproduce the following drawing on chalkboard and label all organs:


OVARY
FALLOPIAN TUBE
UTERUS OR WOMB
CERVIX
VAGINAL OR BIRTH CANAL

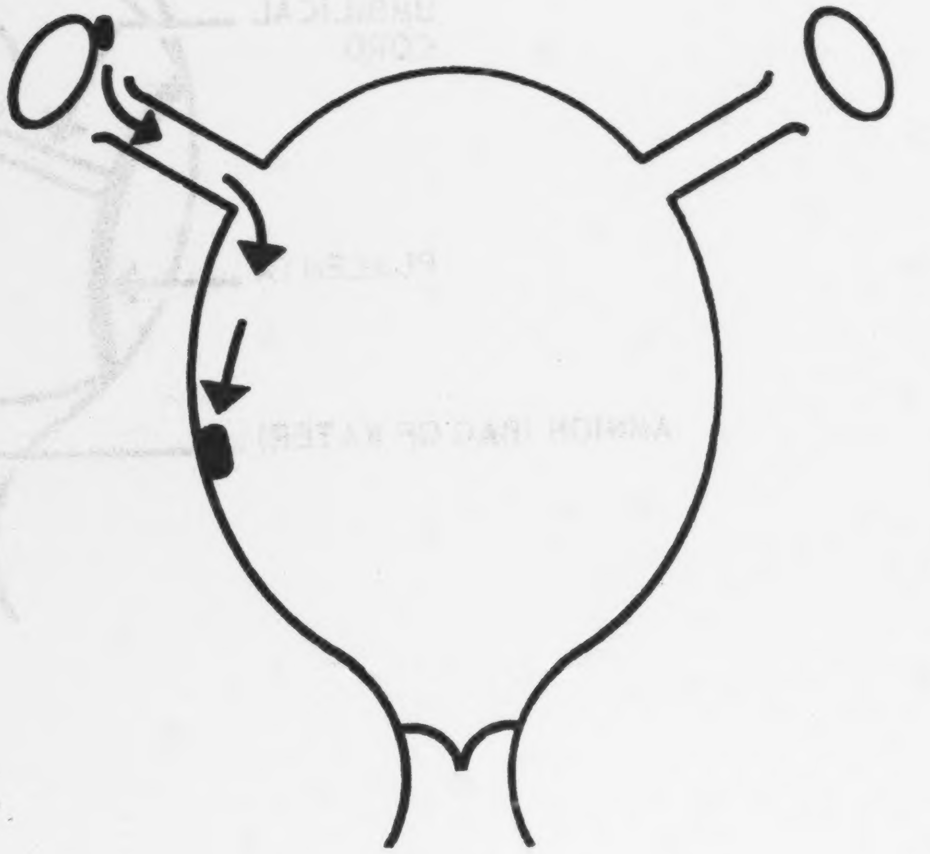
C. Define the following:

Discuss and put on chalkboard

Ovary - Female reproduction gland.
Ovum cell - Female reproduction cell (egg cell)
Ovulation -Act of ovary giving off ovum
Hormones - Control glands - chemical regulation of the body
Sperm cells - Male reproduction cell
Fallopian tubes - Trumpet-shaped- about 4 1/2" long - somewhat thinner than a lead pencil - attached to uterus, but not to ovary - act as passage for ovum, from ovaries to uterus.

Uterus - Thick-walled, muscular, hollow, pear-shaped organ. In non-pregnant state it is about 3" long, 2" wide and 1" thick, and weighs from one to two ounces. The muscles of this organ are so arranged to make expansion possible during pregnancy, and to expel the baby at termination of normal labor.

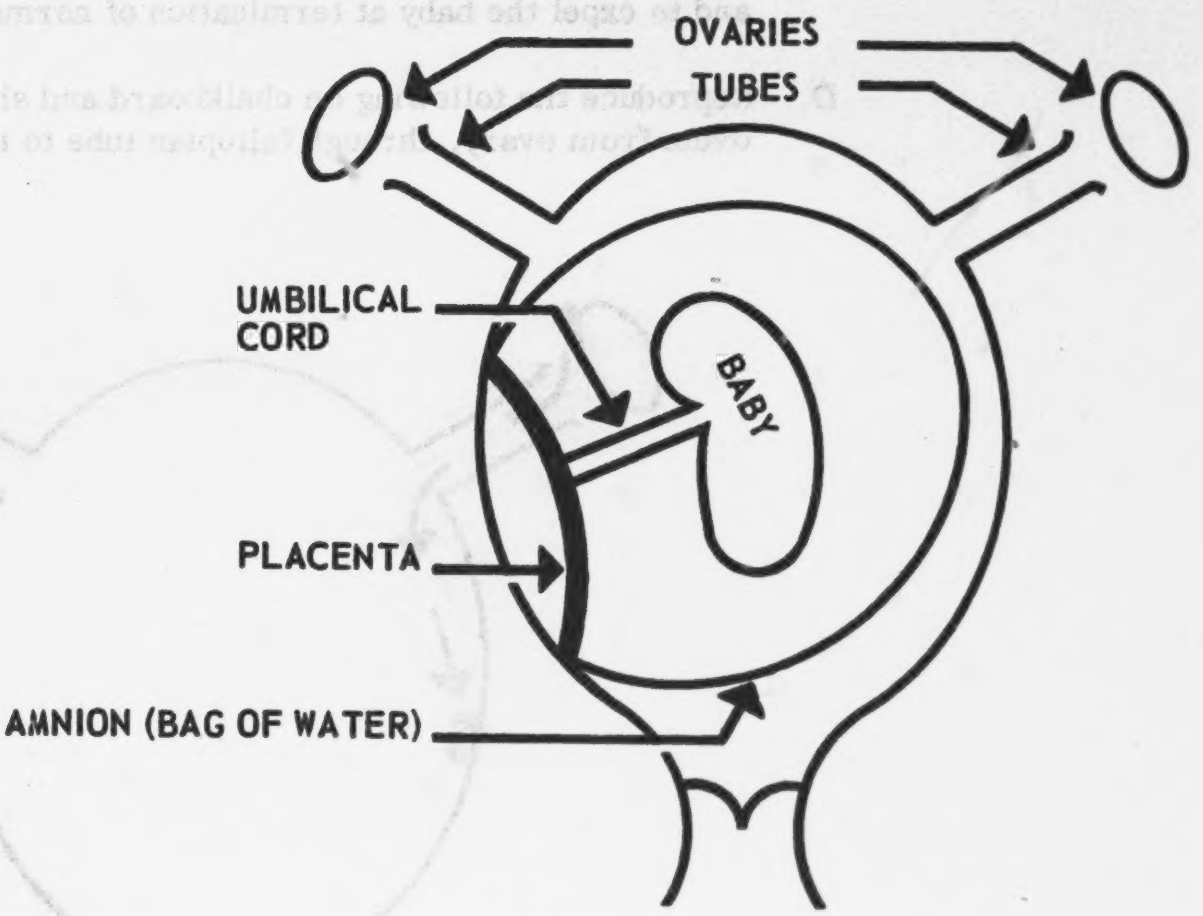
D. Reproduce the following on chalkboard and show the path of the ovum from ovary, through fallopian tube to the uterus.



1. Inner walls of uterus lines itself with matter to receive the ovum. If fertilization does not occur, menstruation takes place cleansing the uterus of the unfertilized ovum and the matter lining the uterine wall.

E. Discuss and describe the impregnation of the ovum.
1. Sperm cell unites with ovum cell causing fertilization.
2. Cells begin to multiply and then form into groups of cells, each group forming different parts of body including umbilical cord, bag of water, placenta and hormone. (Use 100,000 cell description which occurs between 5 to 7 days after conception.)

F. Reproduce the following on chalkboard, showing placenta, umbilical cord, child, and amnion (bag of water).



1. **Placenta - (afterbirth)**
   - a. **Describe and discuss its function. (Page 40)**
     - (1) **Acts as lungs, stomach and kidneys for child.**
   - b. **Connected to child by means of the umbilical cord.**
   - c. **Describe and discuss mother and child's circulation.**
     - (1) **Separate circulatory systems.**
2. **Umbilical cord**
   - a. **Usually about 20" long and 3/4" in diameter.**
   - b. **Contains two arteries and one large vein.**
   - c. **Cord is connected from center of placenta to the abdominal wall of child.**

3. Amnion (bag of water)
    a. A thin transparent sac which holds the child suspended in the amniotic fluid
    b. At full-term pregnancy the sac contains from one-half to one quart of water
    c. Function of bag of water
        (1) To protect fetus from blows
        (2) To allow fetus freedom of motion
        (3) To keep child at an even temperature
        (4) To help enlarge vaginal canal during labor
        (5) When sac ruptures, to flush birth canal so as to cleanse, lubricate and disinfect it.

G. Labor
1. Process by which the child is expelled from the uterus, divided into three stages
    a. Dilation stage
    b. Expulsion stage
    c. Placental stage
2. Dilation stage - begins with the first symptoms of labor and ends with complete dilation of the vaginal canal.

Squad care:
    a. Encourage the expectant mother; display attitude of cheerfulness, sympathy and encouragement.
    b. Observe the character of the pains, note and record: frequency, duration and intensity of pains.
    c. Urge the expectant mother not to bear down. This is futile and can only lead to exhaustion and damage to the birth canal.
    d. Squadmen will prepare to transport to the hospital if expectant mother is in the first stage of labor.
3. Expulsion stage
    a. Expectant mother usually begins to bear down on her own accord.
    b. There is a sudden increase in vaginal discharge.
    c. She thinks she may have to evacuate, due to pressure on rectum.
    d. Bag of water is ruptured due to uterine contraction. This can occur at any time, but occurs most frequently at beginning of second stage.
    e. The vaginal opening begins to bulge; this is a late sign and appearance of the baby should be watched for with every pain.
    f. Crowning The top of child's head will be visible at height of labor pain. This is the last symptom before actual birth.

If examination of the birth canal during labor pain reveals that the mother is crowning, this will indicate that the infant may be born almost immediately. In this case, squadmen should not attempt to transport the mother to a hospital, but should be prepared to deliver the baby in the next few minutes. If she is not crowning during a labor pain, squadmen will probably have time to reach a hospital. In such case, the mother should be transported.

g. Birth of the child

Squad care:

(1) Support the child's head.
- **(a) Head will be first part of body delivered.**
- **(b) Face will usually be pointed or turned toward either of mother's legs.**

(2) Check the child's neck.
- **(a) To determine if cord is wrapped around neck.**
- **(b) If so, and cord is tight, it must be clamped or tied and then cut.**

(3) Delivery of shoulders.
- **(a) Slight traction on the head toward the floor will help deliver the top shoulder.**
- **(b) Slight traction on the head toward the ceiling will help deliver the bottom shoulder.**
- **(c) Continue to support child and be ready for sudden expulsion.**

(4) Guard the cord so as not to tear it.

h. Care of the child.

(1) Turn child on his side across the mother's abdomen.

(2) Pull child's tongue forward.
- **(a) Grasp tongue, top and bottom.**

(3) Clear child's air passage.
- **(a) Wipe out mouth with 4" x 4" gauze over index finger, gently.**

((1)-(2) & (3) above should be carried out on all deliveries, whether the child breathes immediately or not.)

(4) If child starts to breathe, your attention should then be turned to the cord and mother.

(If 30 seconds to one minute have elapsed and child is not breathing, and steps (1) (2) & (3) have been completed, squadman must start resuscitation.

(5) Stimulate the child.
- **(a) Do not slap child.**
- **(b) Rub child with hands to stimulate circulation.**
- **(c) Snap child on bottom of feet.**

(6) Use mouth-to-mouth resuscitation
- **(a) Once or twice, if not breathing continue with step (7) below.**

(7) Use mechanical resuscitator
- **(a) Have machine breathe for child once or twice; if not breathing to this point, continue with step (8) below.**

- (8) Keep up mechanical resuscitation
  - (a) Until child starts to breathe on his own.
  - (b) Or until child is pronounced dead by a physician.

i. Care of the cord
- (1) Milking the cord (page 45 - #1)
- (2) Tying the cord (direct from text, page 45 & 46-#2 -- Demonstrate actually to learners, use rope, etc.)
- (3) Cutting the cord
  - (a) Between the two clamps or ties.
  - (b) Use sterile scissors.

This procedure physically separates mother and child. Child should then be wrapped in soft blanket and given to a competent person. Child should be kept on his side in slight head down position.

4. Placental stage - afterbirth- delivery
   - a. Usually is expelled within 30 minutes after child is delivered.
   - b. One to two cups of blood delivered with placenta. This is normal.
   - c. Placenta to be preserved and taken to hospital with mother and child for examination.

H. Final steps in emergency childbirth -- Squadmen must leave mother and child in the hands of medical personnel, for the following:
1. The child must have a physical examination.
2. The mother must have a physical examination, including checking of birth canal for laceration.
3. Care of child's eyes (silver nitrate)
   - a. State law in Ohio
4. Examination of cord by medical personnel.
5. Mother and child must be observed for a period of time.
6. Birth certificate must be filed.
   - a. State law in Ohio
   - b. Hospital or physician may ask squadman who delivered baby to do this.

(At this point in presentation show the movie -- "Normal Childbirth.")

I. Unusual deliveries
1. Breech birth - presentation of child in reverse position; i.e. buttocks or feet first.
   - a. Squadman supports baby by allowing baby's legs to straddle his arm.
   - b. Child may start to breath as soon as chest is delivered.

c. **Create an air passage by inserting index and second finger in the vaginal canal. Locate baby's nose and separate fingers. Push fingers away from baby's nose to establish air passage.**

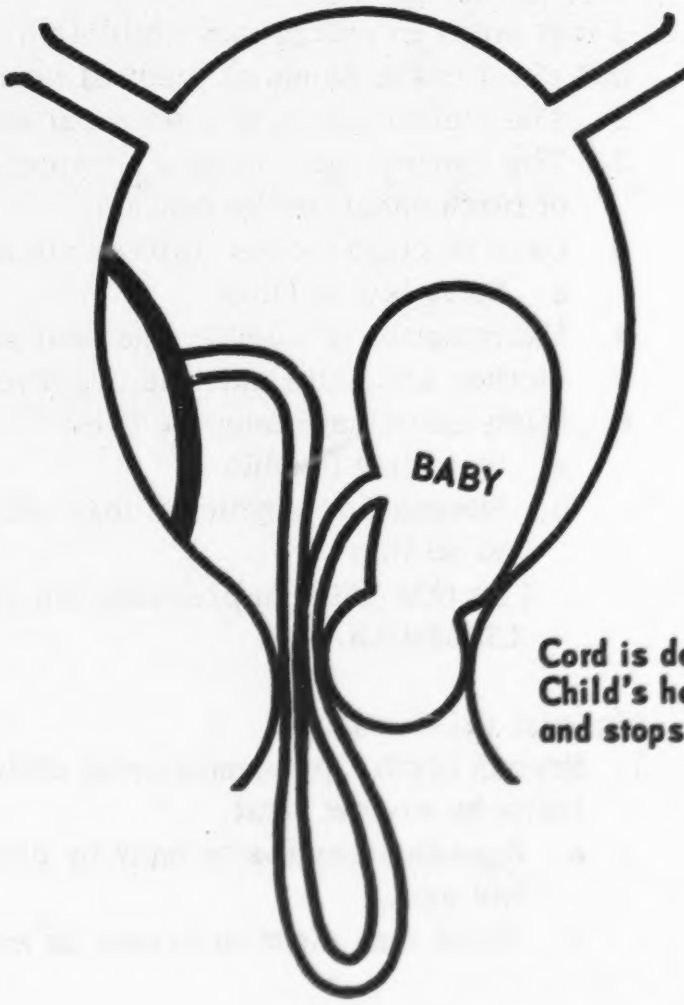
d. **This is only time squadman should touch vaginal canal.**

2. **Other childbirth emergencies**

Instructor to diagram or outline the following:

	Protruding Foot	Protruding Hand	Prolapsed Cord
Squad Care	**Cover with sterile towel and transport.**	**Cover with sterile towel and transport.**	**Real emergency: Cover with sterile towel and maintain hips as high as possible. Transport.**

Reproduce the following on chalkboard to show a prolapsed cord:



Cord is delivered first. Child's head clamps cord and stops circulation.

J. Abortion or miscarriage

1. The giving off of the membranes and the unborn child before the child is able to live on his own.
2. Symptoms:
    - a. Fast pulse
    - b. Perspiration
    - c. Pallor (pale skin)
    - d. Weakness - inability to stand
    - e. Cramping pain in abdomen
    - f. Moderate to severe vaginal bleeding
    - g. Discharge of particles from vaginal canal

    Symptoms displayed will be all of those of shock plus, in many cases, bleeding from the vagina.
3. Squadmen's care
    - a. Place victim in shock position.
    - b. Conserve body heat.
    - c. Squadman may moisten victim's lips if she requests it.
    - d. Do not touch vaginal area; victim is prone to infection.
    - e. Place sterile towels or sanitary napkins at vaginal opening.
    - f. Keep any or all discharged particles and take to hospital with victim. This fleshy material may have form.

UNWED MOTHERS

These mothers need sympathetic care. They may not have had any understanding or considerate care prior to the impending delivery. The first person to have a kind word with her may be the squadman.

The squadmen should explain continually. Be especially careful not to frighten her. The squad run should be listed as "Illness" if these runs are published in the local papers. The squadmen who respond to the call should not discuss the case with anyone except the officers in charge. The other squadmen should not persist in knowing the information surrounding the case. There is an unwritten law that binds the squadmen to silence in these cases. As one person put it, "If these women need anyone, they need us now." These cases should be refrained from in conversation even at home. Do not make a big issue of it at the hospital although the hospital personnel should be informed.

TWINS -- FRATERNAL -- IDENTICAL

Fraternal -- Two children of different pregnancies. Hormone not strong enough to stop other ovary from ovulating. Fraternal equals two cords, two placentas. Twins can be either sex.

Identical twins -- Usually same sex. From same conception - cell group splits forming one placenta but two cords.

STEP III - APPLICATION

1. **Open an O.B. pack for the entire class to see. Discuss the purpose of each item.**
2. **Pass the material around to each student.**

STEP IV - CHECKING AND FOLLOW-UP

1. **Question and answer period.**
2. **Reteach any portion of lesson not thoroughly understood.**

TEACHING GUIDE #5
LESSON PLAN #4

PROCEDURES FOR COMMON SQUAD EMERGENCIES

A-1. Burns
A-2. Penetrating wounds of the eye
A-3. Abdominal injuries
A-4. Open chest wounds
A-5. Convulsions in children
A-6. Contagious diseases
A-7. Poisons
A-8. Proper examination
A-9. Unconscious victims

DESIRED RESULTS:

1. To convey to the learner the importance of the proper victim care of the above listed conditions.
2. To develop in the learner the techniques of good victim care.
3. To develop the practical use of burn sheets, eye shields, etc.

EQUIPMENT AND SUPPLIES:

1. Chalkboard - chalk and eraser
2. Large bath towel (abdominal injuries)
3. Large safety pins (abdominal injuries)
4. Material to demonstrate care of convulsions
   - A. Two or more large bath towels
   - B. One wash cloth
   - C. One ice cap or ice bag
   - D. One large basin
   - E. Demonstration doll
5. Metal eye shields
6. Three burn sheets

REFERENCE:

EVCRM - Chapter 8

STEP I - INTRODUCTION OF LESSON

The squadman's responsibility in the area of victim care is a great one. His ability to give emergency care may often mean the difference between life and death to the victims. Very difficult rescues may be in vain if adequate emergency care is not carried out during and after the rescue.

The procedures given herein follow the recommendations of a competant medical committee which is listed in the acknowledgment pages of the emergency victim care and rescue text. However, if squadmen should find that local medical personnel in the area in which the squad operates recommend a different procedure, we urge that their recommendations be followed. Squadmen should take every opportunity to increase their knowledge in victim care and should rely heavily on local medical personnel for assistance in keeping up to date on the latest procedures recommended locally.

STEP II - PRESENTING THE LESSON

A - 1. Burns - causes. (pages 49-51)
  1. Heat
    a. Dry - (Hot metals - flame - hot objects)
    b. Moist - (Steam - boiling water)
  2. Chemicals
    a. Acids - (Sulfuric - nitric)
    b. Alkalies - (Lye - caustic soda)
  3. Electricity
    a. External burns at point of entry and exit
    b. Adverse effects may be exhibited such as fribulation - respiration problem.
  4. Radiation
    a. Ultra-violet rays - sunburn
      (1) Usually short lived and superficial
    b. X-rays - radium

B - 1. Classification and symptoms
  1. First degree
    a. Only redness of skin - pain
  2. Second degree
    a. Blistered tissue or destruction of the same. Severe pain.
  3. Third degree
    a. Charred or destroyed tissue - may appear white - little or no pain.

C - 1. Squadmen's care
  1. First degree
    a. Apply bland ointment and a snug sterile dressing.

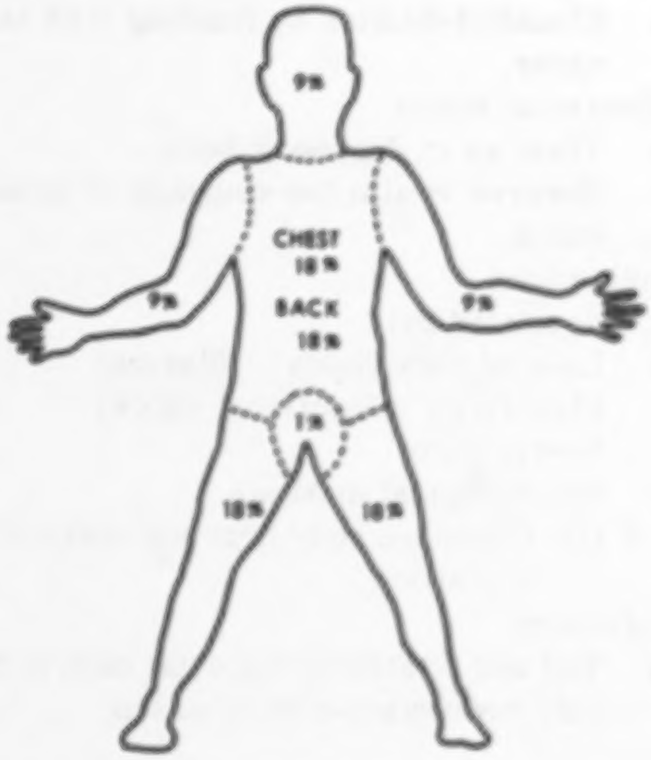
2. Second degree
    a. Dry sterile dressing - snug bandage - do not open blisters - Do not apply ointments.
3. Third degree
    a. Dry sterile dressing - snug bandage - use burn sheets if large area is affected. Do not apply ointments.
4. Chemical burns
    a. (Usually) dilution by flushing with large amounts of water.
5. Electrical burns
    a. Treat as to degree of burn.
    b. Observe victim for stoppage of breathing. Treat for shock.

D - 1. Complications
1. Shock caused by:
    a. Loss of body fluids. (Plasma)
    b. Electricity (Electrical shock)
    c. Severe pain
    d. Psychological distress
        (1) Conserve body heat and elevate feet in treating for for shock.
2. Infection
    a. The use of sterile material next to burns is best and only preventative of infection.

A victim's family (or others) may have applied an ointment to second or third degree burns prior to the arrival of the squad. If such is the case notify hospital personnel as to who applied the ointment; otherwise, the medical team may wrongly think that ointment was applied by the squad.

The extent of a burn is estimated as a percentage of the victim's whole skin surface. The care of a burn patient in the hospital is carried out according to the amount of the body burned.

The "rule of nines" is expressed in the following figure:



Instructor note: At this point have learners perform item #1 as stated in Step III of this lesson.

- A-2. Penetrating wounds of the eye (page 52)
  - 1. Definition: Any wound or injury in which the eyeball has been cut or penetrated.
- B-2. Squadmen's care
  - 1. The squadmen should do whatever is possible to prevent the escape of the vital fluid contained in the eye.
    - a. Do not remove any penetrating object.
    - b. Support object protruding from eye.
    - c. If no object is protruding, cover eye with a metal eye shield. Do not put compress or eye patch on the injured eye.

- d. Cover good eye, this helps to immobilize the eyes.
- e. Keep victim flat on back.
- f. Explain all procedures to victim.

Instructor note: At this point have learners perform item #3 as stated in Step III of this lesson.

A-3. Abdominal injuries (page 52)
- 1. Definition: Laceration or incision of the abdominal wall (area between diaphragm and pelvis) caused by any sharp object, gun shot, or blast.
- 2. Symptoms
  - a. Shock
  - b. Difficult breathing
  - c. Protruding organs
  - d. Fast, weak pulse
  - e. Hemorrhage (arterial or venous)
- 3. Squadmen's care
  (instructor to elaborate on the following)
  - a. Do not return protruding organs.
  - b. Apply moist dressing to prevent exposed bowel from drying.
  - c. Apply snug binder over dressing.
    - (1) Discuss scultetus binder.
  - d. Treat for shock.
    - (1) Positions for breathing difficulty.
      - (a) Semi-sitting
    - (2) Position if pulse is strong.
      - (a) Head and chest slightly elevated.
    - (3) Conserve body heat
      - (a) Use blankets rather than heating pads or hot water bottles.
  - e. Give no fluids
    - (1) If surgery is required, stomach must be empty.
  - f. Transport to nearest hospital S.A.P.

Instructor note: At this point have learners perform item #2 stated in Step III of this lesson.

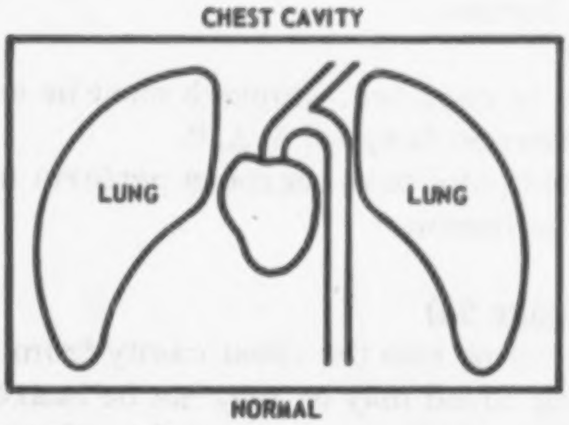
A-4. Open chest wounds (page 54)
- 1. Definition: Any opening into the chest cavity from the outside. A sucking sound may or may not be heard.
- 2. Cause: Result of any object penetrating the soft tissues of the chest.
  - a. Bullet, knife, etc.

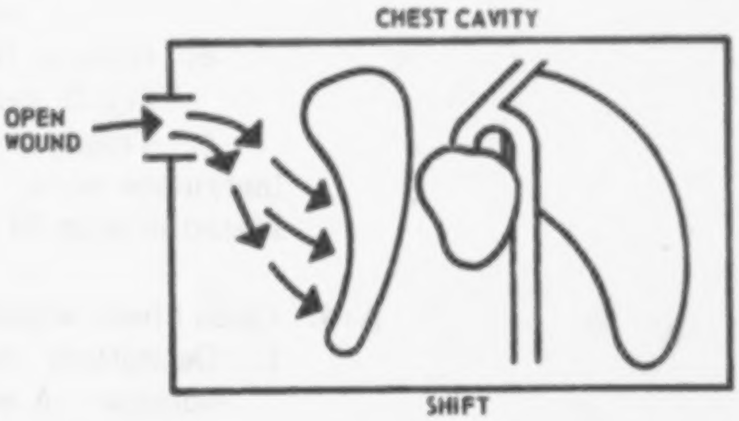
All penetrating wounds of the chest wall should be treated as "sucking" until proved otherwise.

3. Symptoms: Actually there may be more signs than symptoms indicating such a condition.
   a. A sucking sound may be heard due to air rushing into chest cavity as victim breathes.
   b. Object may be protruding from chest wall (i.e., knife)
4. Squadmen's care
   a. Seal wound from outside as soon as possible
      (1) Use only non-porous material.
         (a) 4" or 6" tape
         (b) Plastic, sealed with tape
      (2) Be sure opening is well covered to prevent seepage of air.
   b. Place victim in sitting position or position most comfortable for breathing.
   c. Administer oxygen, but do not force mask on victim.
   d. Reassure victim.
   e. Transport to nearest area of definitive care.
      (1) Transport on injured side if possible.

Do not remove any protruding objects. These objects left in place will assist in sealing off wound and will control bleeding somewhat.

Instructor to reproduce following on chalkboard and discuss shift that occurs. (medialstinal shift)





Air pressure outside, being greater than pressure in area around lungs, rushes in with force that may create a sucking sound. This force of air will cause lung to collapse and shift, squeezing the heart and aorta, resulting in impaired or complete shutdown of circulation. This will cause a type of heart failure, with possible death. Seal off opening immediately. Use bare hand if nothing else is available.

A-5. Convulsion in children (page 61)

1. Definition: A loss of consciousness with a generalized twitching of the muscles.
2. Causes:
   a. Birth injuries
   b. Onset of an infectious disease
   c. Epilepsy
   d. Drug poisoning
   e. High fever

In children that the squadmen will see, the usual cause of a convulsion is a high fever. (This is true 95% of the time.)

3. Symptoms:
   a. General, involving all the muscles of the body.
   b. May involve only a certain part of the body.
   c. Victim may only stiffen with no threshing motion.
4. Squadmen's care:
   a. If high fever is causing convulsion, the child's temperature must be lowered.
   b. Sponge child's body with cold applications. (Tap water only - not ice water.)
      (1) Obtain two large bath towels.
      (2) Fill a basin with cold tap water.
      (3) Remove all of child's clothing
      (4) Submerge towel in water and apply completely open on one side of child's body. (Front or back.)
      (5) Pat, do not rub, towel until it becomes warm. Turn child over and apply another wet towel. Pat until it becomes warm.
      (6) Repeat until convulsions stop or until a physician arrives.
      (7) Maintain airway, be sure to watch for gag reflex.

Remember to cool one side of child at a time. An ice bag can be placed at child's head. Do not add alcohol to water unless directed by a physician. Never submerge child in bath tub. Children should always be in hands of medical personnel before the squadmen leave them.

A-6. Contagious diseases (page 62)

1. Need for special care: There are times when the emergency squad answers a call in which, after direct contact with the victim, and after transporting him to the hospital, it is found that the victim suffers from a contagious disease. Since there are many ways in which contagious diseases are transmitted, it is a must for all squadmen to take certain special care not only of their person and personal clothing, but of their equipment, apparatus, and vehicle.
2. Precautions:
   Review table #1, page 63 in the text, and define the following terms:
   a. "Air car" - Car should be out of service for indicated time. All windows and doors should be opened.
   b. "Boil linens" - Water should boil before adding linens, and should boil for 20 minutes after adding linens.
   c. "Scrub car" - Wash inside of vehicle and all equipment that was in contact with victim. Soap and warm water to be used. After washing wipe down with solution of zephiran, 1:750.
   d. "Incubation period" - period between the time of being exposed and the showing of symptoms.
   e. "Mode of transmission" - method or the way a disease is transmitted from one person to another.
   f. All squadmen should wash their hands at the hospital after each run.

PROCEDURES FOR COMMON SQUAD EMERGENCIES

Table I HANDLING OF CONTAGIOUS DISEASES

COMMON NAME	MEDICAL SYNONYMS	INCUBATION PERIOD	MODE OF TRANSMISSION	CARE OF SQUAD VEHICLE AND LINENS *	CARE OF PERSONNEL **
Diphtheria	Membranous croup	1 to 7 days	Droplet infection and direct contact with cases or with a healthy carrier.	Air car 12 hours. Launder linens.	Schick test. Immunize.
Scarlet fever	Scarlatina	1 to 7 days	Droplet infection, foamites, carriers, pets occasionally.	Air car 12 hours, and scrub. Boil linens.	Dick test. Shower. Change and boil clothes.
Measles	Rubeola or Red measles	7 to 18 days; usually 9 to 11 days	Secretions from respiratory tract and eyes, droplet infection.	Air car 12 hours. Launder linens.	Wash hands.
German measles	Rubella	5 to 21 days	Direct contact, droplet infection from nose and mouth.	Air car 12 hours. Launder linens.	Wash hands.
Whooping cough	Pertussis	2 weeks	Droplet infection, carriers.	Air car 12 hours and scrub. Isolate and boil linens.	Shower. Change and boil clothes.
Mumps	Parotitis epidemic	12 to 24 days; usually 16 to 18 days	Direct contact, droplet infection from nose and mouth.	Air car 12 hours. Air and change linens.	Wash hands.
Chicken pox	Varicella	10 to 20 days; usually 14 days	Droplet infection from nose and mouth; direct or indirect contact.	Air car 12 hours and scrub. Boil linens.	Shower. Change clothes.
Smallpox	Variola	3 to 18 days; usually 10 to 12 days	Direct or indirect contact.	Scrub car. Burn linens.	Burn clothes. Re-vaccinate all exposed persons immediately.
Spinal meningitis or Cerebro-spinal fever	Meningococcus meningitis	3 to 7 days	Droplet infection from nose and mouth of patients or carriers.	Air car 12 hours. Launder clothes.	Shower. See M.D. for possible medication.
Typhoid fever	Enteric fever	10 to 15 days	Fecal contamination of food, water, or milk.	Air car 12 hours. Boil linens if contaminated with urine or feces.	Wash hands and face.
Tuberculosis	Koch's disease or TB	Varies	Infected sputum.	Use sputum cups and burn. Scrub car. Boil clothes and linens.	Avoid close facial contacts.
Syphilis	Lues VD	3 weeks	Usually sexual contact.	Air and launder linens. (No special car care.)	Wash hands. If scratched call M.D.
Infantile paralysis	Poliomyelitis	7 to 14 days	Uncertain: possibly nose and throat.	Air car 12 hours. Launder linens. Wash equipment with soap and warm water.	Shower. Change clothes.
Hepatitis	Serum hepatitis or Infectious hepatitis	10 to 14 days	Infected blood.	Air car 12 hours. Boil linens if contaminated with blood or feces.	Wash hands.

* When a car is being "aired," it is not to be in service. To "scrub car" means to wash the entire inside of the squad car with soap and water.

** In all of these conditions, except syphilis, the squadmen should use cloth, contagious-disease masks.

A-7. Poisons (page 64)

1. Types of poisons
   a. Inhaled
   b. Ingested (Taken by mouth)

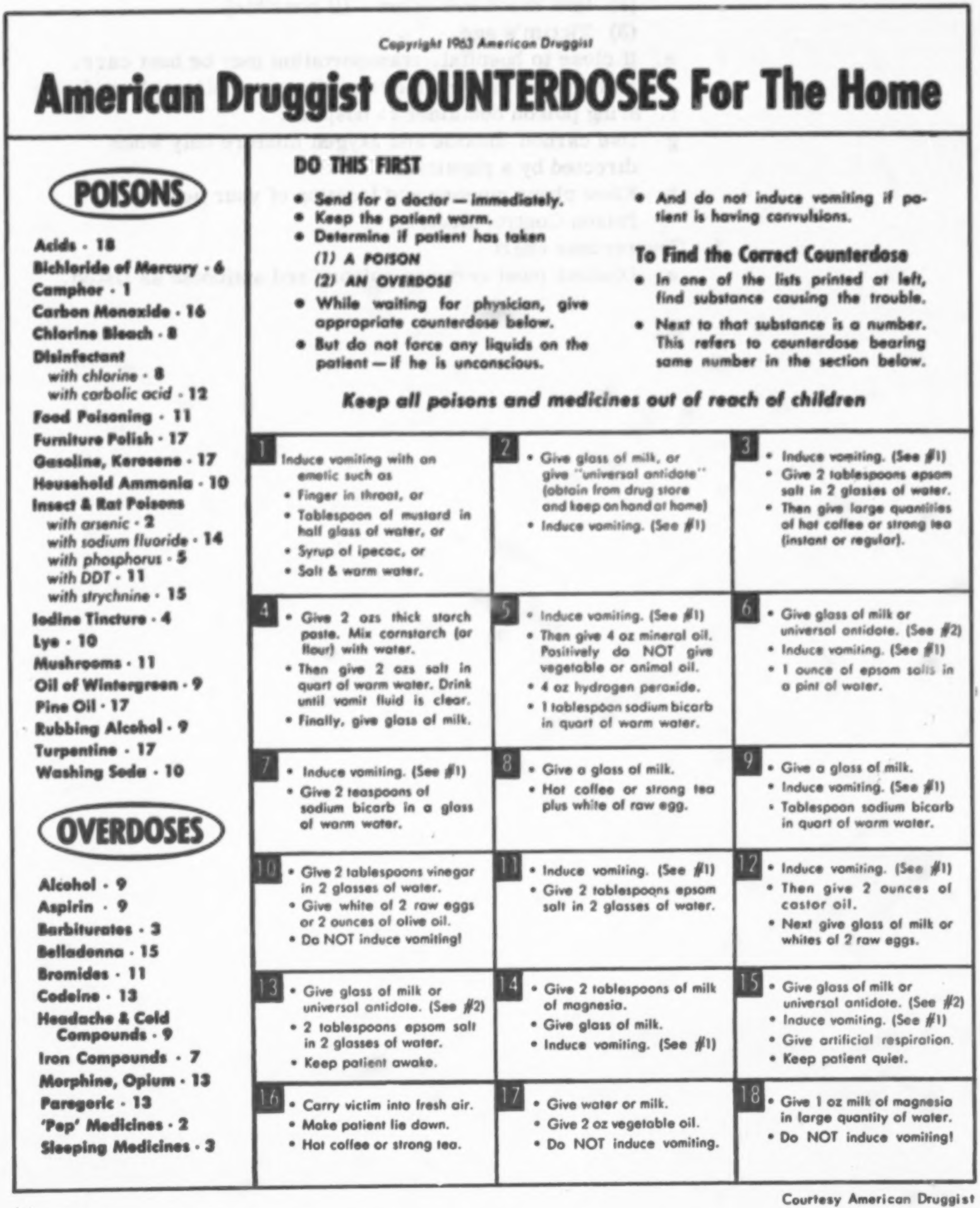
Inhaled poisons will cause respiratory difficulty or stoppage of breathing. The care of this type victim will be covered in the lesson on "Resuscitation."

The ingested (taken by mouth) poisons will be discussed in this lesson.

2. Definitions:
   a. Demulcent - An agent that will soothe a part. (Olive oil, glycerin, milk)
   b. Emesis - Act of vomiting.
   c. Emetics - Materials that produce vomiting. (Syrup of epicac)
   d. Extremities - Usually refers to the arms and legs.
   e. Gastric - Pertaining to the stomach.
   f. Lavage - To wash out a cavity. (Stomach)
   g. Stomach tube - Refers to a stomach pump. Squadmen never use these.
3. Causes:
   a. Some of the most common causes of accidental poisoning are:
      (1) Aspirin overdose (#1 with children)
      (2) Kerosene
      (3) Turpentine
      (4) Household waxes
      (5) Furniture polish
      (6) Household soaps
      (7) Household bleach
      (8) Cosmetics - containing wood alcohol and denatured alcohol.
      (9) Lead - as found in paint can be accumulative.
      (10) Insecticides and rodenticides
4. Squadmen's care
   a. Check label of poison container for possible specific antidote.
   b. Use water if you are at a loss for antidote.
   c. No fluids by mouth if victim is unconscious

- d. Notify hospital prior to admission giving:
    - (1) Name of poison.
    - (2) How much was taken. (If possible)
    - (3) Victim's age.
- e. If close to hospital, transportation may be best care, rather than taking time to prepare complicated antidote.
- f. Bring poison container to hospital.
- g. Use carbon dioxide and oxygen mixture only when directed by a physician.
- h. Know phone number and location of your nearest Poison Control Center.

5. Counterdose chart
    - a. Discuss most common poisons and antidotes as listed.



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American Druggist COUNTERDOSES For The Home

POISONS

Acids - 18
Bichloride of Mercury - 6
Camphor - 1
Carbon Monoxide - 16
Chlorine Bleach - 8
Disinfectant
  with chlorine - 8
  with carbolic acid - 12
Food Poisoning - 11
Furniture Polish - 17
Gasoline, Kerosene - 17
Household Ammonia - 10
Insect & Rat Poisons
  with arsenic - 2
  with sodium fluoride - 14
  with phosphorus - 5
  with DDT - 11
  with strychnine - 15
Iodine Tincture - 4
Lye - 10
Mushrooms - 11
Oil of Wintergreen - 9
Pine Oil - 17
Rubbing Alcohol - 9
Turpentine - 17
Washing Soda - 10

OVERDOSES

Alcohol - 9
Aspirin - 9
Barbiturates - 3
Belladonna - 15
Bromides - 11
Codeine - 13
Headache & Cold Compounds - 9
Iron Compounds - 7
Morphine, Opium - 13
Paregoric - 13
'Pep' Medicines - 2
Sleeping Medicines - 3

DO THIS FIRST

- **Send for a doctor — immediately.**
- **Keep the patient warm.**
- **Determine if patient has taken**
  - *(1) A POISON*
  - *(2) AN OVERDOSE*
- **While waiting for physician, give appropriate counterdose below.**
- **But do not force any liquids on the patient — if he is unconscious.**
- **And do not induce vomiting if patient is having convulsions.**

To Find the Correct Counterdose

- **In one of the lists printed at left, find substance causing the trouble.**
- **Next to that substance is a number. This refers to counterdose bearing same number in the section below.**

Keep all poisons and medicines out of reach of children

1
Induce vomiting with an emetic such as
- Finger in throat, or
- Tablespoon of mustard in half glass of water, or
- Syrup of ipecac, or
- Salt & warm water.

2
- Give glass of milk, or give "universal antidote" (obtain from drug store and keep on hand at home)
- Induce vomiting. (See #1)

3
- Induce vomiting. (See #1)
- Give 2 tablespoons epsom salt in 2 glasses of water.
- Then give large quantities of hot coffee or strong tea (instant or regular).

4
- Give 2 ozs thick starch paste. Mix cornstarch (or flour) with water.
- Then give 2 ozs salt in quart of warm water. Drink until vomit fluid is clear.
- Finally, give glass of milk.

5
- Induce vomiting. (See #1)
- Then give 4 oz mineral oil. Positively do NOT give vegetable or animal oil.
- 4 oz hydrogen peroxide.
- 1 tablespoon sodium bicarb in quart of warm water.

6
- Give glass of milk or universal antidote. (See #2)
- Induce vomiting. (See #1)
- 1 ounce of epsom salts in a pint of water.

7
- Induce vomiting. (See #1)
- Give 2 teaspoons of sodium bicarb in a glass of warm water.

8
- Give a glass of milk.
- Hot coffee or strong tea plus white of raw egg.

9
- Give a glass of milk.
- Induce vomiting. (See #1)
- Tablespoon sodium bicarb in quart of warm water.

10
- Give 2 tablespoons vinegar in 2 glasses of water.
- Give white of 2 raw eggs or 2 ounces of olive oil.
- Do NOT induce vomiting!

11
- Induce vomiting. (See #1)
- Give 2 tablespoons epsom salt in 2 glasses of water.

12
- Induce vomiting. (See #1)
- Then give 2 ounces of castor oil.
- Next give glass of milk or whites of 2 raw eggs.

13
- Give glass of milk or universal antidote. (See #2)
- 2 tablespoons epsom salt in 2 glasses of water.
- Keep patient awake.

14
- Give 2 tablespoons of milk of magnesia.
- Give glass of milk.
- Induce vomiting. (See #1)

15
- Give glass of milk or universal antidote. (See #2)
- Induce vomiting. (See #1)
- Give artificial respiration.
- Keep patient quiet.

16
- Carry victim into fresh air.
- Make patient lie down.
- Hot coffee or strong tea.

17
- Give water or milk.
- Give 2 oz vegetable oil.
- Do NOT induce vomiting.

18
- Give 1 oz milk of magnesia in large quantity of water.
- Do NOT induce vomiting!

Courtesy American Druggist

A-8. Proper Examination (page 66)
1. "People who have not been trained sometimes wrongly think that a victim is under the influence of alcohol, when actually he needs medical care. Squadmen should not accept the opinion of a casual bystander that a victim is "drunk" but should examine him carefully for symptoms of diabetes, epilepsy, and/or other conditions.

A-9. Unconscious persons (page 66)
1. Unconsciousness is the state of being insensible or without conscious experience.
2. Causes: The causes of this type victim are many and complex. This lesson will deal with some essentials. Care of unconscious victims with particular illnesses and injuries are covered throughout this course.
3. Essential points to remember
    a. Air passage is usually poor.
    b. Inhaling of foreign material may be fatal.
    c. All body functions are impaired, and respiration may be slower.
    d. Remember that the unconscious person is breathing; do not mistake this type for the asphyxiated victim.
4. Squadmen's care
    a. Check air passage - insert an airway - watch for gag reflex.
    b. Turn victim on side if vomiting.
    c. Support with oxygen.

STEP III - APPLICATION

1. Demonstrate and have learners open burn sheets. Have learners apply burn sheets to a supposedly burned area. Caution learners to prevent contaminating burn sheets.
2. Have learners return demonstration of applying bath towel to an abdominal injury.
3. Have learners apply a metal eye shield for eyeball injury.
4. Ask questions and correct errors.

STEP IV - CHECKING & FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE #6
LESSON PLAN #5

PROCEDURES FOR COMMON SQUAD EMERGENCIES AND THE MENTALLY DISTURBED

A-1. Diabetes
A-2. Epilepsy
A-3. Stroke
A-4. The Mentally Disturbed
A-5. Delirium Tremens - Hysteria - Amnesia

DESIRED RESULTS:

1. To convey to the learner the importance of the proper victim care of the above listed conditions.
2. To develop in the learner the techniques of good victim care.
3. To impress upon the learner that he is to assist the mentally disturbed and not judge or punish them.

EQUIPMENT AND SUPPLIES:

1. Chalkboard - chalk - eraser
2. One 4" x 4" compress for each learner
3. Two tongue blades for each learner
4. Three 6" pieces of 1/2" adhesive tape for each learner

REFERENCE:

EVCRM - Chapter 8 - pages 67-70
Chapter 9 - pages 79-83

STEP I - INTRODUCTION OF LESSON:

Many people are victims of diabetes. This lesson is intended to give the squadman a working knowledge of this condition, and to present the best squad care. The emergency care of the stroke victim will be presented. The squadman is confronted with this type victim quite frequently.

Mental disturbance may present itself in varying degrees. This condition in one degree or another may be evident not only from the victim but from onlookers or relatives.

STEP II - PRESENTING THE LESSON:

A-1. Diabetes - page 67-68

1. Definition: A chronic disorder of the metabolism, the inability of the body cells to use sugar as energy. Malfunction of the pancreas, the gland that secretes insulin. The diabetic can go into either of two conditions:
    - a. Diabetic coma
    - b. Insulin shock
2. Diabetic coma
    - a. High amount of sugar in blood.
    - b. Victims in coma should be checked for "card" or "medic-alert" emblem as to whether victim is or is not diabetic. Relatives or friends may volunteer information.
3. Signs or symptoms (diabetic coma)
    - a. Confused and unable to cooperate.
    - b. Nausea and vomiting may be present.
    - c. Breathing is deep but not labored.
    - d. Skin is dry and cold.
    - e. Breath has a sweetish or fruity odor.
4. Squadmen's care (diabetic coma)
    - a. Victim needs insulin.
    - b. Squadmen are not permitted to administer insulin.
    - c. Transport to hospital immediately.
5. Insulin shock
    - a. Low amount of sugar in blood.
        - (1) Victim omitted a meal.
        - (2) Victim may have vomited meal.
    - b. Sometimes from undue exertion.
6. Signs or symptoms (insulin shock)
    - a. General muscular weakness with mental confusion.
    - b. Restlessness.
    - c. Profused sweating.
    - d. Dizziness.
    - e. Pallor or flushing of the face.
    - f. Trembling.
    - g. Hunger pangs in upper stomach.

    Some victims may lapse into a coma. Their blood sugar lowers so rapidly that symptoms progress without warning.
7. Squadmen's care (insulin shock)
    - a. Give high sugar solution.
        - (1) Sugar water
        - (2) Orange juice
        - (3) Candy

        (Refer to squad care, top of page 68)

8. Critical questions
    a. Two questions can be asked of the diabetic victim to help in determining which state he might be entering.
        (1) Have you eaten today?
        (2) Have you taken your insulin today?
            (refer to "questions" on page 68)

Instructor to give the following example:

A man is driving along a highway and suddenly his car goes off the road. Your squad is called. Upon arrival you find no external injuries, the victim seems dazed, and is just able to talk. You then find a card on the steering wheel column stating that the victim is a known diabetic. Upon asking the prescribed questions, you find that he took his insulin that morning but did not eat all day. What condition is he in? "Insulin Shock." Why? Because he had taken the insulin and had not taken in any sugar to use it up. He therefore had a low amount of sugar in the blood, or insulin shock.
If the victim does not answer coherently or even seems a little unsure, transport him to the nearest hospital.

Instructor to diagram the following on chalkboard:

	Insulin Shock	Diabetic Coma
Cause:	Low amount of sugar in blood.	High amount of sugar in blood.
Need:	Sugar	Insulin
Care:	Give high sugar solution (sugar water, juices, candy). This victim will be alert and able to continue his activities in a short time.	Transport to the nearest hospital.

A-2. Epilepsy (page 68-69)
1. Definition: A disease characterized by attacks of loss of consciousness, with or without convulsions.
2. Symptoms:
    a. Mildest form may be merely attack of momentary unconsciousness.
    b. Most severe - violent seizures and convulsions.

The type that the squad usually responds to are the violent, uncontrolled seizure which is characterized by muscular contraction and relaxation. This produces a threshing type motion. Every muscle in the body will usually be involved. The head, as well as the arms and legs, will be threshing against the floor or the ground.

3. Squadmen's care
   a. Insert padded tongue blade. (Refer to pages 68-69, fig. 23-24)
      (1) Insert in either side of mouth at the back teeth.
      (2) Prying between large back teeth minimizes damage.
   b. Protect victim's head.
      (1) Use blanket roll, pillow, etc., between victim's head and the floor or ground.
   c. Control victim's motions.
      (1) This does not mean to restrain victim.
      (2) Grasp victim's wrist and ride with his motions, controlling such motions to prevent injury.
   d. Victim's color may be blue.
      (1) Result of diaphragm not functioning properly due to its being in contraction, as are all other muscles of the body.
      (2) Victim will usually "pink-up" as soon as seizure stops.
   e. Oxygen administration
      (1) If, after seizure subsides, color remains blue or ashen.
   f. Observe victim and note the following facts which should be passed on to the emergency room personnel.
      (1) Parts of body involved in the seizures.
      (2) How long the seizure lasted.
      (3) Duration of time between seizures, if more than one.
   g. Transport victim
      (1) As soon as seizure subsides, transport to the nearest medical facilities.
4. Complications
   a. Bodily injury - This may be due to the victim having had an attack while at the top of a stairway or some other dangerous place. Body harm may also be caused by improper methods of first aid.

A-3. Stroke (page 70)

1. Definition: A loss of consciousness and paralysis due to hemorrhage in the brain; formation of a clot cutting off blood supply to brain. Sometimes called apoplexy or a stroke of paralysis, medically referred to as C.V.A., cerebral vascular accident.
2. Causes:
   a. Cerebral hemorrhage
      (1) Escape of blood into the tissues of the brain.
   b. Arteriosclerosis
      (1) Hardening of arteries.
   c. Cerebral thrombosis
      (1) Blood clot obstructing flow to brain tissue (usually result of arteriosclerosis).

3. Symptoms:
   - a. Numbness in an extremity.
   - b. Mental confusion, unable to concentrate.
   - c. Paralysis of a body function.
   - d. Unconsciousness.
4. Squadmen's care:
   - a. Maintain clear air passage.
     - (1) Very important in stroke victim.
   - b. Support with oxygen.
     - (1) Be ready to resuscitate if victim stops breathing.
   - c. Elevate head and shoulders slightly.
   - d. Cold applications to victim's head.
   - e. Give nothing by mouth.
     - (1) Do not give stimulants
   - f. Move victim only when necessary.
   - g. Transport as soon as possible.

A-4. The Mentally Disturbed (Chapter 9, pages 79-83)

The American Psychiatric Association has divided the reactions to large-scale emergencies into five categories: (1) normal reaction, (2) individual panic or blind flight, (3) depressed reaction, (4) overly active response, and (5) bodily reaction. Each squadman must understand these individual reactions and how to cope with them.

1. Normal reaction - often seen at scene of emergency. Squadman himself may have this reaction to an emergency.
   - a. Symptoms (normal reaction)
     - (1) Trembling
     - (2) Profused perspiration
     - (3) Nausea
     - (4) Weakness
     - (5) May be confused
     - (6) "Temporary" state of shock
   - b. Squadmen's care (normal reaction)
     - (1) Reassure them
     - (2) Encourage them often; they may recover in a short time.
     - (3) They then may be able to assist in case of large-scale emergency.
2. Blind flight or individual panic
   Some laymen describe this disturbance as "running wild."

- a. Symptoms:
  - (1) Victim may attempt to flee from the scene.
  - (2) Victim may be running wildly about the scene.
  - (3) Victim may lose all judgment.
  - (4) Victim may want to do unreasonable things.
  - (5) Victim may weep uncontrollably.
- b. Squadmen's care:
  - (1) Be firm but gentle at first.
  - (2) If victim causes others to panic he should be isolated.
  - (3) Never put this victim in same vehicle with severely injured people.
    - (a) Call another squad.
  - (4) Do not strike the panicky victim.
  - (5) Do not throw cold water on him.

3. Depressed reactions

This type of victim is usually found at large-scale accidents such as tornadoes, explosions, train and bus accidents, etc.

- a. Symptoms:
  - (1) Victim may behave as though no one was around him.
  - (2) He seems to be "in another world."
  - (3) Accident being more than victim can stand mentally.
  - (4) Victim shuts outside world out.
  - (5) He may have vacant expression.
  - (6) He may sit or stand without talking or moving.
- b. Squadmen's care:
  - (1) Do not push this type victim.
  - (2) Your contact must be gentle.
  - (3) Try to get victim to talk.
  - (4) Find a simple, routine job for him - this often helps.
    - (a) Holding light, equipment, etc.
  - (5) Do not tell victim to "snap out of it."
  - (6) Do not feel or show any resentment toward victim.
  - (7) Do not pity him verbally.

4. Overly-active response

Upon arrival the squadmen may at first think this person is being helpful, but in a short time it will be found that his activities are useless.

- a. Symptoms:
  - (1) This person will be exploding with energy and ideas.
  - (2) He can not sit or stand still.
  - (3) He will jump from one job to another, finishing none.

        (4) He may joke inappropriately, talk very rapidly and be argumentative.
        (5) Victim may be hindrance to good squad procedures.
    b. Squadmen's care
        (1) Do not agree with them.
        (2) Find jobs for them that require physical activity.
        (3) Give them personal attention.
        (4) Talk with them for a short while.
            (a) If they think they are "on your side," they will be of some help to you.
        (5) Do not tell them they "should not feel the way they do."

5. Bodily reactions

These reactions are different from the normal reactions described in this section.

- a. Symptoms:
    - (1) Severe nausea and vomiting.
    - (2) Loss of motion to limbs.
    - (3) Loss of sight, hearing or speech may occur.
        - (a) These are forms of conversion hysteria.

Do not assume that someone who shows symptoms of conversion hysteria is not physically injured until he has been examined thoroughly.

- b. Squadmen's care
    - (1) If a victim believes that a part of his body is injured, treat it as though it is.
        - (a) Applying a splint or other measures may help temporarily.
    - (2) Show the victim that you are interested in helping him.
    - (3) Having something to do will help victim to forget his disability.
    - (4) Do not blame or ridicule him.
    - (5) Do not tell him there is nothing wrong with him.
    - (6) Remember that a victim can be functionally blind or paralyzed even though the involved structure is uninjured.

Summary:
In dealing with any of the five described reactions, the squadman must establish an effective contact with the disturbed person. Once this contact is made it is reasonably easy to help him.

A victim may exhibit one reaction and later another.

The following general approaches should produce positive results:

1. Accept every person's right to have his own feelings. People do not always act as we want them to.
2. Accept a casualty's limitations (or reactions) as real.
3. Size up a casualty's potentialities as accurately and as quickly as possible.
4. Accept your own limitations in disaster or accident situations.

A-5. Delirium tremens

1. Definition: A mental disorder involving hallucinations both visual and in hearing, commonly called D.T.'s.
    - a. Causes:
        - (1) A prolonged alcoholic drinking spree or a sudden withdrawal from alcohol.
        - (2) An acute infectious disease.
        - (3) Severe injury, especially fractures and crushing injuries.
    - b. Symptoms:
        - (1) Depression, uneasiness and insomnia for a day or two.
        - (2) Coarse shaking.
        - (3) Hallucinations of sound and sight. The victim may hear or see things not present.
        - (4) The victim may not be able to communicate with the squadmen.
        - (5) May be only semi-conscious.
    - c. Squadmen's care:
        - (1) Talk to victim at all times.
        - (2) While talking try to direct him into the squad car.
        - (3) If victim is violent, he must be restrained for the protection of victim and squadmen.
        - (4) Transport to medical or psychiatric care.

2. Hysteria:
    - a. Causes:
        - (1) Usually caused by a nervous disorder or psychological shock.
    - b. Symptoms:
        - (1) A wide range of symptoms.
            - (a) Mild, as a headache.
            - (b) Severe or violent, as to bring on self-destruction or personal injury.

c. Squadmen's care:
   In your speech and movements, try to convey a reassuring calmness.
   (1) The squadman's actions should not be hasty but deliberate and meaningful.
   (2) Talk to the victim softly and slowly. All motions should be slow and deliberate.
   (3) After talking to the hysteria patient in order to win his confidence, the squadman should then plan his action to get the victim to medical help.
   (4) Many times, the victim will not consent to ride in a squad car but will go with one of his family in a private car. If they are quiet and act normally, letting the victim go with a member of his family might be the best move.
   (5) If the victim is violent upon the squadman's arrival, the squadman must take precautions so as not to cause harm to himself or the victim. The same previously mentioned approach may be used to get close to the victim. As soon as the squadman is able to grasp the victim, he should do so, but he should first make certain there is plenty of additional help on hand. Some feel it is better to approach the violently ill in numbers from the very beginning.
   (6) The squadmen should try to get this type of victim to medical help quickly.

3. Amnesia
   a. Causes:
      (1) Usually a physical or psychological shock.
   b. Symptoms:
      (1) He may or may not be able to give his name.
      (2) He will not remember anything about his past or his whereabouts.
      (3) He will be slow to move.
   c. Squadmen's care:
      (1) The squadmen may attempt to secure some information from victim.
      (2) Transport to nearest medical help for definite, appropriate treatment.

STEP III - APPLICATION:

1. Have each learner make a padded tongue blade.
2. Demonstrate on yourself how to insert a padded tongue blade.

STEP IV - CHECKING AND FOLLOW-UP

1. **Question and answer period.**
2. **Reteach any portion of lesson not thoroughly understood.**

TEACHING GUIDE #7
LESSON PLAN #6

FRACTURES AND BACKBOARDS

DESIRED RESULTS:

1. To impress upon the learner the importance to immobilize all suspected fractures.
2. To convey to the learner an understanding of what happens inside the envelope of the skin when a fracture occurs.
3. To introduce and use the available types of fracture equipment.
4. To develop skills and techniques in the recommended use of the backboard.

EQUIPMENT AND SUPPLIES:

1. Chalkboard - chalk and eraser
2. 35 mm. slide projector and screen
3. X-ray slides
4. Improvised splinting material
    - A. Large magazines (2 for each learner)
    - B. Pillows
    - C. Blankets (one for each learner)
5. Triangular bandages for each learner
6. Fracture kit
7. Backboards and footrests
8. Compresses
9. Roller bandages
10. Tape
11. Traction splints
12. Splinting boards
13. Pneumatic splints
14. Other fracture and splinting equipment available to instructor or squad

REFERENCE:

EVCRM - Chapter 8, pages 55-60
Chapter 13, pages 127-148

STEP I - INTRODUCTION OF LESSON

Definition: A fracture is any break in the continuity of a bone.

Emergency care and immobilization of suspected fractures is found to be one of the most neglected areas of squad care. Many victims have been permanently disabled due to poor or no immobilization of broken bones.

It is to be stressed that all squadmen examine victims thoroughly for any suspected fractures and to apply proper splinting material.

STEP II - PRESENTING THE LESSON

- A. Cause of fractures
  - 1. Any accident in which the force causing injury is so great that one or more bones of the body are broken, cracked, or bent such as a "green twig" fracture common in small children.
- B. Purpose of bones
  - 1. Body structure (posture)
  - 2. Protection (rib cage - pelvis, etc.)
  - 3. Produces red blood cells in bone marrow.
- C. Types of fractures
  - 1. Simple
    - a. No opening to outside
    - b. Skin remains intact
    - c. Sometimes called closed fracture
  - 2. Compound
    - a. A fracture with a connecting wound to outside.
      - (1) Gunshot wounds
      - (2) Stab wounds
    - b. The bone does not need to protrude to constitute a compound fracture, although this type is a very vivid example.
    - c. Sometimes called an open fracture.
- D. Other varieties of fractures
  - 1. Complicated fracture
    - a. Broken ends of bone have injured other organs of body such as nerves, blood vessels, bladder, lungs, etc.
    - b. May be either compound or simple.
  - 2. Impacted fracture
    - a. The broken end of one bone is wedged into the interior of the other.

FRACTURES AND BACKBOARDS

E. Symptoms
- 1. Deformity
- 2. Loss of motion
- 3. Grating sensation
  - a. Upon examination of injured part a grating sensation is felt in squadman's fingers due to broken ends of bones rubbing one upon the other.
- 4. Shortening of a limb
- 5. Pain (severe or moderate)
- 6. Wound at fracture site
  - a. Indicates compound
- 7. Bone protruding (compound)
- 8. Bleeding at fracture site
  - a. Indicates compound

All of these symptoms are not necessarily present in every fracture. The signs observed will indicate the type of fracture present.

F. Squadmen's care
- 1. Simple fracture
  - a. Immobilize (splint) beyond the adjacent joints
  - b. Treat for shock
  - c. Transport
- 2. Compound fracture
  - a. Control bleeding
  - b. Care for open wound
  - c. Treat for shock
  - d. Immobilize (splint) beyond the adjacent joints
  - e. Transport
- 3. Splinting
  - a. Demonstrate the different types of splinting material and equipment.
  - b. Use improvised splinting material in addition to commercial equipment.
    - (1) Large magazines, blanket roll, etc.
  - c. Splints to be well-padded
  - d. Fracture victims transported best on a backboard

Show x-ray slides of severe fractures and elaborate on squad care for each fracture.

G. The fracture lesion
- 1. Definition: A lesion is any change in tissue formation.
  - a. Lesions may vary from a simple crack in the bone with mild disturbance of surrounding tissues.
  - b. Lesions may be so severe as to have a marked displacement of the fragments and much damage to all the neighboring tissues.

c. In examining the victim the squadman should observe:
   (1) The character of fracture and nature of soft-part damage.
   (2) The stage of changes present.

The fracture lesion description is presented to show the seriousness of fractures. (Instructor to go over the material on page 57 of the text with the class.)

H. Use of backboards

The backboard is a versatile tool. Its primary purpose is the immobilization of fractures of the neck and back. This rigid board is also ideal for moving victims of other conditions such as fractures of the pelvis or legs.

After using the backboard for a short time, squadmen will recognize many other types of situations in which it is useful.

1. Logrolling

Definition: Logrolling is the turning of a victim's body by several people working in unison. Its purpose is to protect a victim who must be moved onto (or off) a backboard when his back or neck may be injured.

a. Preparing to roll
   (1) Emergency care given before victim is logrolled.
   (2) Roll on least injured or non-injured side.
   (3) Raise victim's arm on the side onto which he is to be rolled.
   (4) Three men needed to logroll victim - four if neck is injured.

b. Position of hands (refer learners to Fig. 2, p. 128)
   (1) The top man's top hand is under neck supporting the head. His bottom hand grasps victim's clothing (or skin) at the shoulder.
   (2) The center man's top hand is to be around victim's distant arm and grasping clothing. His bottom hand grasps clothing at belt region.
   (3) The bottom man's top hand grasps the victim at the hip region. His bottom hand grasps the distant leg at the calf.

c. Roll (refer learners to Fig. 3, page 128)
   (1) At signal from the top man, all three roll victim toward them in unison.
   (2) All squadmen should be kneeling on same knee.

d. Placing the board (refer learners to Fig. 4, page 129)
   (1) While victim is held on his side, the board is placed flat on ground or floor next to victim.

- (2) On signal from top man victim is lowered on the board.
- e. Sliding the victim (refer learners to Fig. 5, page 129)
  - (1) If victim is not centered when placed on board, he should be slid over by squadmen in unison.
- f. Board with footrest (refer learners to Fig. 6, page 130)
  - (1) If footrest is to be used, insert it before logrolling victim.
  - (2) Squadman will measure the board and footrest before placing it on the floor.
  - (3) Victim is then logrolled as previously described.
- g. Possible neck injury (refer learners to Fig.'s 7-8, page 131)
  - (1) If neck injury is suspected, one man will attend the head and neck at all times until it is immobilized.
  - (2) Squadman attending neck and head applies slight traction and keeps nose in line with "belly-button" while logrolling.
  - (3) Squadman caring for neck and head gives all signals.
  - (4) Victim's neck should then be immobilized using a blanket roll splint.
- h. Rolling victim face down
  - (1) When a victim is found face down he should be transported that way because of:
    - (a) Severe bleeding at face
    - (b) Secretions and mucus from mouth
    - (c) Vomiting, etc.
  - (2) Procedure is much the same as previously stated.
    - (a) Explain procedures as shown in Fig.'s 9-10, 11-12, pages 132-133.

2. Handling of backboards (refer learners to Fig.'s 13 to 20, pages 134 to 136)
   - a. Strapping victim to a board
     - (1) Straps go completely around board and not through holes.
     - (2) Three strap positions
       - (a) Bottom strap around board and around victim just above his knees.
       - (b) Middle strap around board and around victim at hip region with strap passing over and securing wrists.
       - (c) Top strap around board and around victim at chest region, just below shoulders at nipple line.

- (3) Securing feet and hands
    - (a) If victim must be carried up or down for any distance, a footrest must be used.
    - (b) Tie victim's feet to footrest with a cravat.
    - (c) Victim's head kept secure by tying with cravat through holes in board, at head area.

b. Raising the board (refer learners to Fig.'s 15 to 19, pages 135-137.
- (1) Demonstrate method of horizontal raise.
- (2) Demonstrate method of vertical raise.

3. Removing victims from an automobile

Victims of auto accidents ard especially likely to have head, neck, and back injuries. Moving these victims carelessly has resulted in needless deaths and permanent paralysis.

Instructor to demonstrate the following. If possible a wrecked car should be obtained for this lesson. Impress upon all learners that continuous practice is necessary.

a. Removal from the driver's seat.
b. Removal from under dashboard.
c. Removal from front seat (prone).
d. Removal from the back of car.

STEP III - APPLICATION

1. Have learners return all demonstrations.
2. Divide class into groups of three or four. Have one squadman in each group act as a victim.
3. Give each group a separate problem.
4. The individual groups will give all squad care that their problem requires.
5. Splinting and first aid equipment should be available for each group.
6. Give enough problems to cover all major types of fractures.
7. Give some problems where backboards will be used, and improvised splinting.
8. Check off each group after victim care has been completed.
9. Question each man on some part of squad care given.
10. If a good splint or good improvisation is used, commend them and bring it to the attention of the entire class.

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE #8
LESSON PLAN #7

CORONARY ATTACK AND CHRONIC HEART FAILURE

DESIRED RESULTS:

1. To impress upon the learner the importance of providing good squad care to this type of victim.
2. To develop the learner's skill in the proper care of these victims.

EQUIPMENT AND SUPPLIES:

1. Chalkboard - chalk and eraser
2. 16 mm. sound movie projector and screen
3. Movie film: "A Matter of Time" or "Heart Disease"

REFERENCE:

EVCRM - Chapter 8, pages 71-78

STEP I - INTRODUCTION OF LESSON

A "heart attack" is an acute condition that is medically referred to as "coronary thrombosis." It is a sudden blocking of one of the coronary arteries: The arteries that supply the heart muscle with blood.

Although a heart attack itself is sudden, it is a result of atherosclerosis: A slowly developing disease process of the coronary arteries. Atherosclerosis causes most heart attacks and the chest pain called angina pectoris. It is a form of arteriosclerosis (hardening of the arteries).

Diseases of the heart and circulatory system are a major cause of death. Research has proven that the care given to the victim within the first hour of his attack may mean his life! This initial emergency care is so important that every squadman should be skilled in all aspects of care for this type victim. The squadmen, responding to so many heart attack cases, sometimes tend to become lax in giving care. It is imperative that squadmen should never consider the run as a routine situation.

STEP II - PRESENTING THE LESSON

A. Discuss the heart and its functions

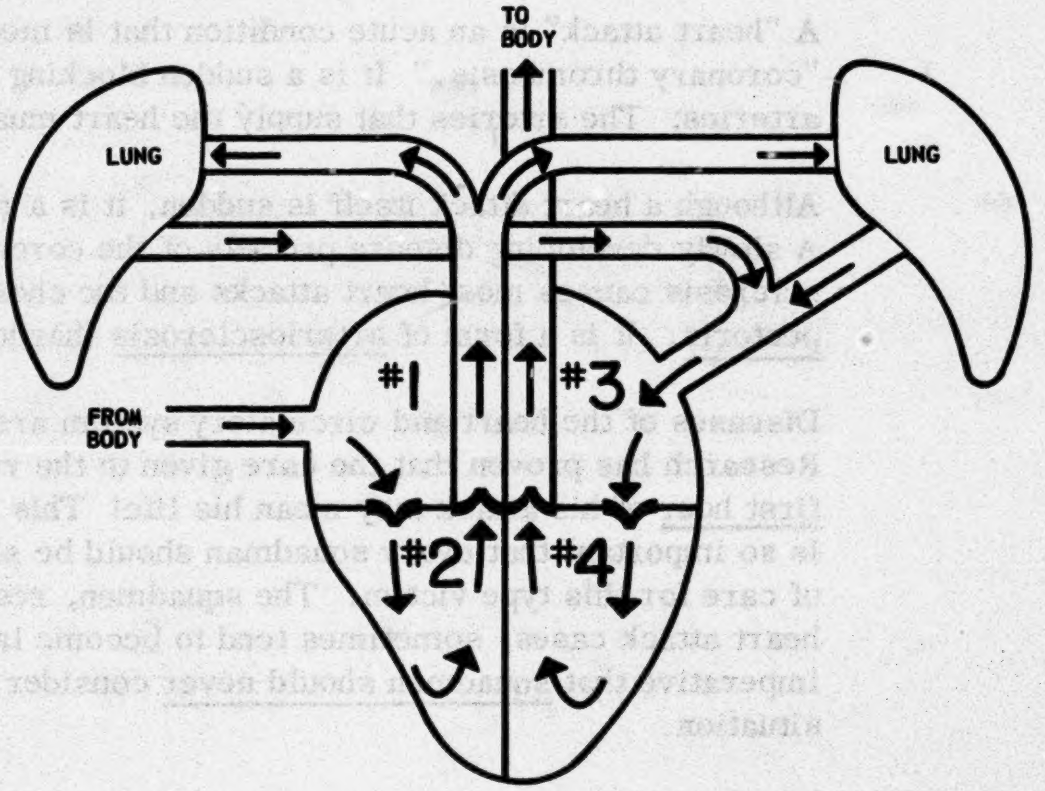
1. A powerful hollow muscle divided into four chambers, interconnected with one-way valves.
2. The heart is about the size of your fist.
3. Heart pumps or beats 70 to 80 times per minute.
4. Normally heart rests twice as much as it works.
5. Under strenuous exertion or emotional strain, heart works twice as hard and has less time to rest.
6. The heart by its pumping action circulates blood to all parts of the body.

B. Blood - Purpose and functions

1. Carries food to body cells. -------- Through the arteries
2. Carries oxygen to body cells.
3. Carries away waste products. ------ Through the veins
4. Carries away carbon dioxide.
5. Blood has pressure.

   The absence of any of the above listed functions will cause death.

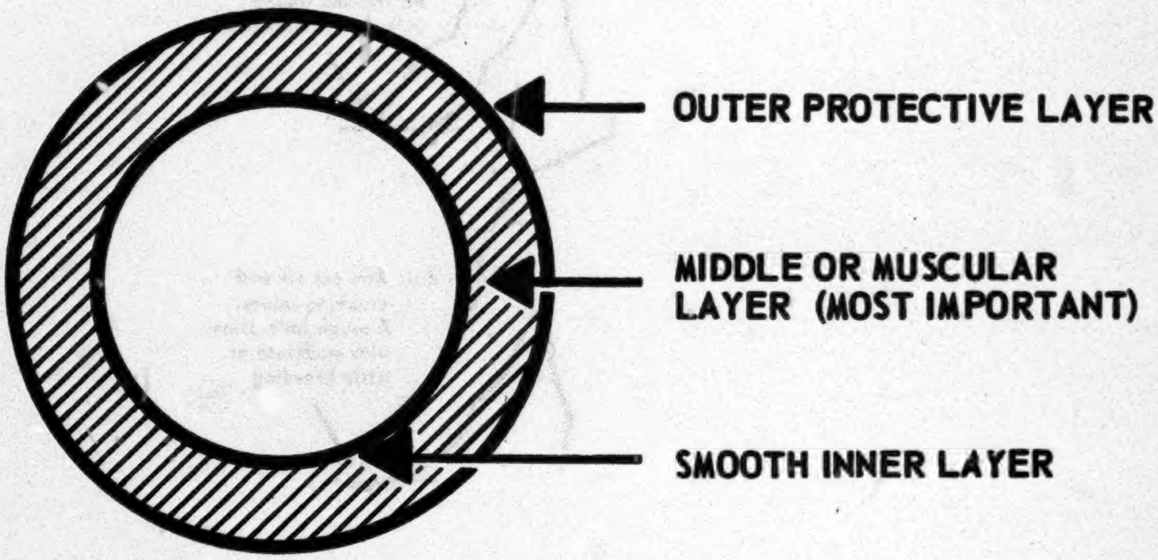
C. Using the chalkboard, draw and label the circulation of the blood, through the heart, to the lungs, return to the heart, and out through the aorta.



Chamber #1 - From body, blood is low in pressure and oxygen, high in carbon dioxide.

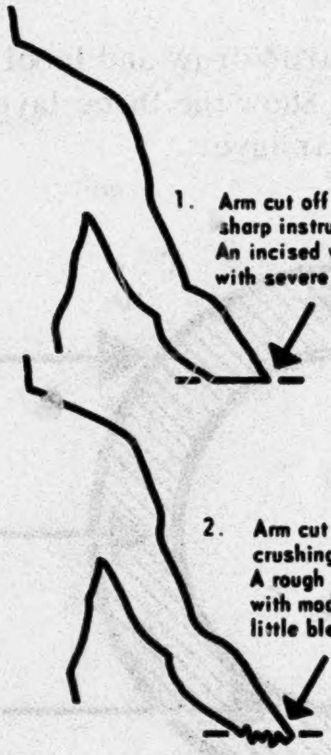
Chamber #2 - Pump to lungs.
Chamber #3 - From lungs, blood is high in oxygen, low in pressure.
Chamber #4 - Pump to all parts of body, under pressure.

D. Using the chalkboard, draw and label a cross section of a normal artery. Show the three layers and their purpose. Stress the muscular layer.


OUTER PROTECTIVE LAYER
MIDDLE OR MUSCULAR LAYER (MOST IMPORTANT)
SMOOTH INNER LAYER

1. Muscular layer contracts in shock, fear and apprehension.
2. Muscular layer expands when victim is relaxed and when body is kept warm.
3. Smooth inner layer reduces friction loss and helps maintain pressure.
    a. Use fire hose as example.

E. Using the chalkboard, draw and describe the clotting mechanism.

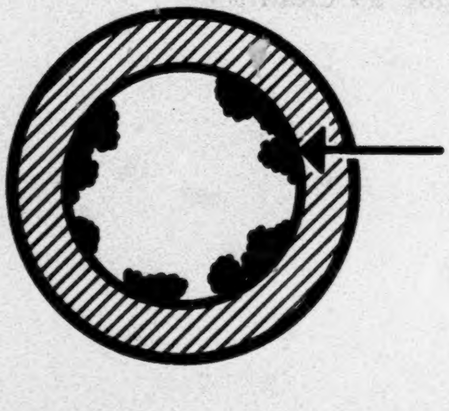


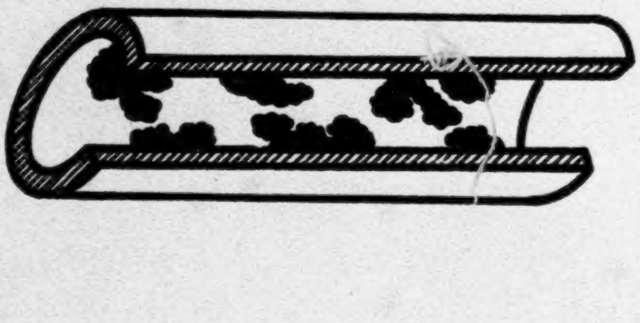
1. Arm cut off with sharp instrument. An incised wound with severe bleeding.

2. Arm cut off with crushing injury. A rough laceration with moderate or little bleeding.

3. Discuss how the rough surfaces cuase clotting; tell how clotting mechanism goes to work on the rough surfaces in comparison to the incised wound.

F. Draw an artery with atherosclerosis; describe how the cholesterol build-up causes rough patches which in turn starts the clotting mechanism.

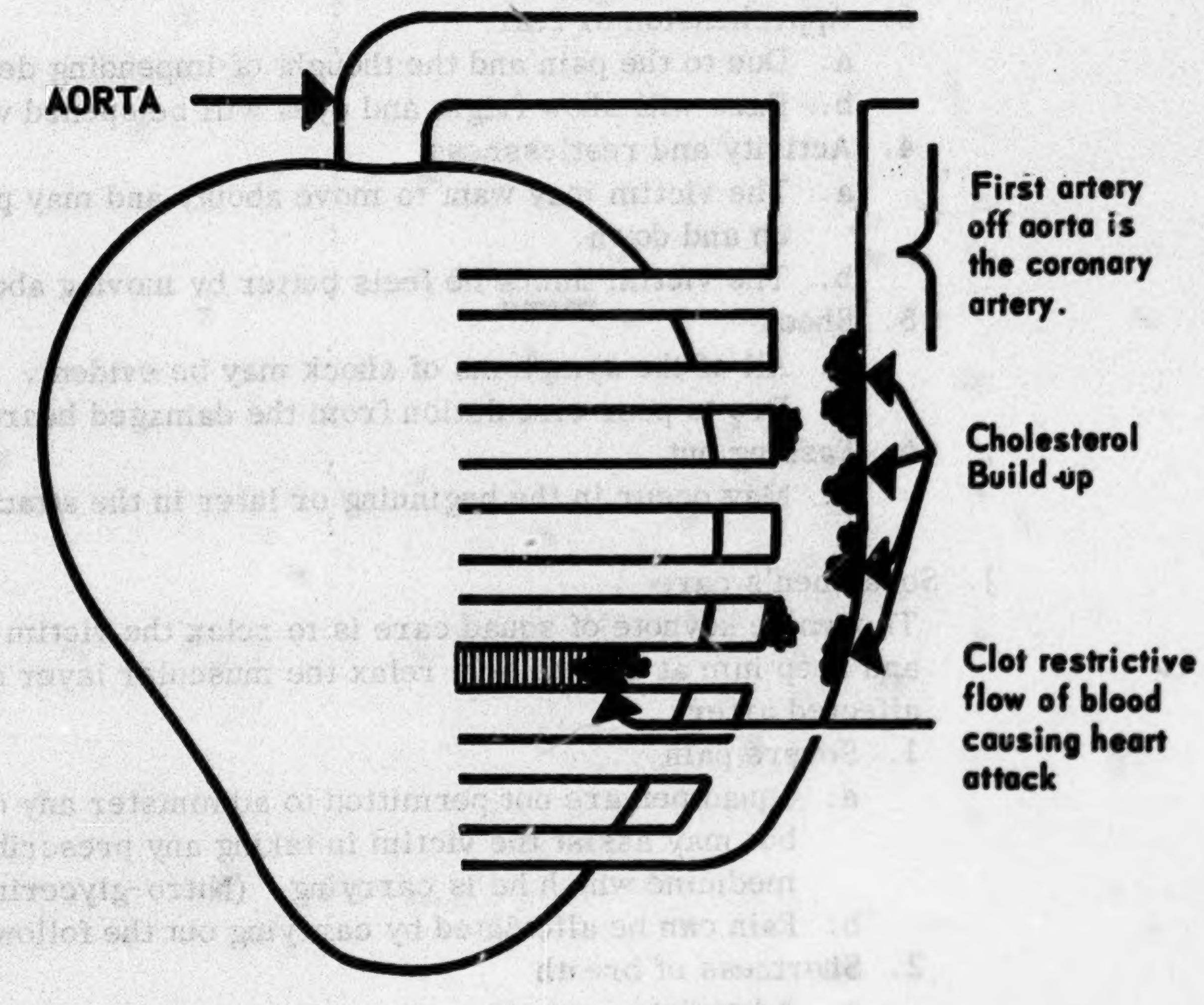

Smooth inner layer with cholesterol build-up of rough patches


Side view of artery

CORONARY ATTACK AND CHRONIC HEART FAILURE

1. Cholesterol is necessary for all, for it helps in digestion and breakdown of fats. But for some reasons it tends to build up in certain people, causing the rough patches in the coronary arteries.
2. Cholesterol build-up in gall bladder causes gall stones.
3. Clot caused by rough patches can either build up blocking artery or will break loose and travel to a point where it becomes restricted. In either case it stops flow of blood carrying food and oxygen.
   a. Permanent or stationary clot called a "thrombus."
   b. Traveling clot called an "embolis."

G. Draw a heart and the coronary arteries. Show a traveling and a permanent clot.


AORTA
First artery off aorta is the coronary artery.
Cholesterol Build-up
Clot restrictive flow of blood causing heart attack

1. Describe how the heart will falter and begin to fail due to being deprived of food and oxygen.

H. Discuss collateral circulation
  1. Arteries become restricted to assist circulation; nearby arteries get wider and even develop tiny new branches to deliver blood where it is needed.
  2. Collateral circulation assists the heart in mending itself after an attack occurs.

I. Symptoms of coronary attack
  1. Severe pain
    a. Mid-chest area, may radiate to shoulder, arm and hand.
    b. Victim may only complain of numbness in the above-mentioned parts.
  2. Shortness of breath
    a. Due to diminished supply of blood from heart to lungs.
    b. This is a very dramatic and severe symptom.
  3. Apprehension or fear
    a. Due to the pain and the thought of impending death.
    b. Face will show fright and eyes will be opened wide.
  4. Activity and restlessness
    a. The victim may want to move about, and may pace up and down.
    b. The victim thinks he feels better by moving about.
  5. Shock
    a. All of the symptoms of shock may be evident.
    b. Due to poor circulation from the damaged heart.
  6. Passing out
    a. May occur in the beginning or later in the attack.

J. Squadmen's care

The whole keynote of squad care is to relax the victim. Reassure and keep him at rest to help relax the muscular layer of the affected artery.
  1. Severe pain
    a. Squadmen are not permitted to administer any drugs but may assist the victim in taking any prescribed medicine which he is carrying. (Nitro-glycerine tablets)
    b. Pain can be alleviated by carrying out the following steps.
  2. Shortness of breath
    a. Administer oxygen
    b. If victim fights the mask do not force it on him. Disconnect mask and hold outlet beneath his chin or in front of nostrils.

3. Apprehension or fear
    a. "Talk to him" - tell him what will be done and why.
    b. Talking to him tends to alleviate his fear and to help him relax.
4. Activity and restlessness
    a. "Do for him" - every effort should be made to keep the victim from being active or restless.
    b. Keep him at rest, but do not force or fight him.
5. Shock
    a. Care of a heart victim under shock is somewhat different than usual shock care.
    b. Three important words to remember are heat, position and fluid.
        (1) Heat - conserve body heat, but do not overheat. If victim has smothering reaction, put blanket or covering in place of greatest ease or comfort of victim.
        (2) Position - place victim in most comfortable position, usually in a semi-sitting position.
        (3) Fluids - give only small sips; best to just moisten lips.
            (a) Too much fluid can cause victim to vomit putting greater strain on heart.
            (b) If water is given, it should not be ice water.
6. Passing out
    a. Maintain open air passage.
    b. If victim should stop breathing, resuscitate immediately.
7. Transportation
    a. Exert every effort to keep victim comfortable and at rest.
    b. Follow normal flow of traffic.
    c. No sirens or red light.
    d. Maintain oxygen administration.

K. Chronic heart failure
1. Causes
    a. Old age - heart is just about worn out, so to speak.
    b. Damaged heart - possibly from a previous coronary.
    c. Diseased heart - rheumatic fever, etc.

The chronic heart victim is one who has such a weak heart that it is unable to do its usual work. As a result, circulation is so impaired that the heart, in its attempt to pump faster and harder, actually tires or fails. In this victim, the heart expands too much and does not have enough contraction.

2. **Symptoms:**
   - a. **Severe fatigue**
     - (1) Victim may hardly be able to move.
     - (2) Victim may be scarcely able to talk.
     - (3) Victim may look like one who has just run a long distance.
   - b. **Shortness of breath**
     - (1) Due to congestion and poor circulation in the lungs.
     - (2) Respiration may be noisy or wet due to the congestion and poor circulation.
     - (3) Poor heart action does not supply enough oxygen to the body.
   - c. **Swelling of hands, ankles and feet.**
     - (1) Due to accumulation of body waste products.
     - (2) Poor circulation not able to remove the body waste.
   - d. **Shock**
     - (1) Victim will exhibit all symptoms of shock during attack.
     - (2) Victim will perspire profusely.

3. **Squadmen's care**
   - a. Severe fatigue - anticipate the victim's every need. Do not move victim unless necessary.
   - b. Shortness of breath - give oxygen. This type victim will exhibit oxygen hunger and will not fight the mask.
     - (1) Noisy respiration - if the inhalator in service has a breathing bag, follow procedure described on page 78 of the EVCRM.
   - c. Shock - as in the coronary, the usual shock care is varied.
     - (1) Heat - conserve body heat but do not overheat.
     - (2) Position - victim will usually want to stay in a position where chest is elevated.
       - (a) Do not force him to lie down, for he could drown from the fluid in his lungs.
       - (b) Many chronic heart victims have lived with their condition for years. They may even sleep in a chair to keep chest elevated at all times.
     - (3) Fluids give only a small amount of water or just moisten lips.

In transporting this type of victim, keep him comfortable at all times. If his head and chest must be lowered for a short time to carry out transportation, explain this before doing it.

CORONARY ATTACK AND CHRONIC HEART FAILURE

STEP III - APPLICATION

1. Show the film: "Matter of Time" or "Heart Disease."

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE #9
LESSON PLAN #8

RESUSCITATION—MANUAL AND MECHANICAL

DESIRED RESULTS:

1. To develop in the learner the proper application of the approved method of manual artificial respiration.
2. To develop in the learner a basic understanding of the mechanics of breathing and effects of oxygen loss to the body.
3. To perfect the learner's skill in using the mechanical resuscitator and other oxygen apparatus.

EQUIPMENT AND SUPPLIES:

1. Chalkboard - chalk and eraser
2. 16 mm. movie sound projector and screen
3. Film on mouth-to-mouth breathing
4. Mannequin properly equipped for demonstration and practice of mouth-to-mouth
5. S-shaped resuscitubes, mouth-to-mask, and other resuscitation adjuncts to mouth-to-mouth breathing that may be available
6. Mechanical resuscitator used by squad being taught
7. Hand towel
8. Glass of water (for demonstrating aspiration)
9. Several blankets
10. 35 mm. slide projector
11. Laryngectomy slides

REFERENCE:

EVCRM - Chapter 10 - Pages 85 to 104

STEP I - INTRODUCTION OF LESSON

There are two basic methods for administering artificial respiration: manual (mouth-to-mouth) and mechanical (resuscitator). Over the years the different types of "push-pull" artificial respiration methods that have been used were proven to be ineffective due to the rescuer being unable to maintain an open air passage. This problem is overcome by using the mouth-to-mouth method. The mechanical resuscitator is probably the most used piece of equipment on any emergency squad. All squadmen should be "experts" in the operation and application of this important machine.

STEP II - PRESENTING THE LESSON

A. The control of the act of breathing

1. The carbon dioxide and oxygen level in the circulating blood control the breathing center in the brain. This, in turn, controls the chest muscles and diaphragm. This cycle is the basic control of our breathing.
2. Elevation of carbon dioxide in the blood increases the rate of respiration.
3. Interruption of the breathing cycle will produce a non-breathing or asphyxiated victim.
4. The time element: (The instructor will present the following in discussing the time element)

The Time Element - We so often hear about the time element associated with the restoration of respiration. The reason for this is that the brain cells are very delicate and require a great deal of oxygen. If they are without oxygen for a short length of time, these cells will die. Because the brain is the control center of the body, loss of oxygen to these cells is most serious. The time element can best be shown in the following way:

X ______________________?______________________ X
Respiration stops Heart stops

We must restore respiration between the time the victim stops breathing and the time the heart stops.

If the victim's heart stops there is no way to get oxygen out to the body tissues as the blood is the method of transportation.

What is that time in minutes? Research has proven that we have about one quart of oxygen in our blood most of the time. They have also found that we have about one quart of oxygen in our lungs. The following is the sum of our only stored supply:

Lungs	1 quart of oxygen
Blood	1 quart of oxygen
Total	2 quarts of oxygen

Research has also found that our body uses up 1/2 pint of oxygen every minute.

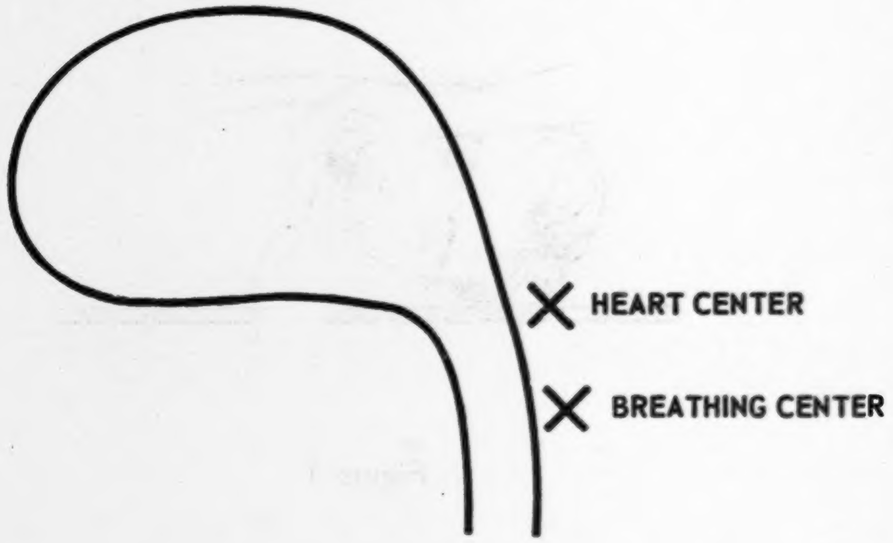
If a person should stop breathing the body will still continue to use up oxygen and the heart will continue to pump blood. With two quarts of oxygen in reserve and our body using up 1/2 pint of oxygen each minute, we then have about eight minutes of oxygen available.

When this two quarts of oxygen is fully used by the body, it is then that we are "absolutely without oxygen." It is at this time that the brain cells begin to die. It has been found that the entire brain will be dead in five minutes after the stored oxygen has been used up.

In round numbers, the victim has approximately 10 minutes to start breathing or for someone to breathe for him.

When the squadman arrives, he must determine if the victim is not breathing. This can be ascertained by placing the palm of the hand just below the chest bone and ribs just over the diaphragm. If the victim is not breathing there will be no motion of the abdominal wall. The squad now must start artificial respiration.

Show on the chalkboard the brain and location of heart and breathing control centers.



5. Three conditions necessary for any form of artificial respiration to be effective.
   a. Open air passage
      (1) This can be controlled by squadman when using mouth-to-mouth.
   b. Circulating blood
      (1) A later lesson will present a method of artificial blood circulation by the use of closed chest heart compression.

c. Living brain cell
    (1) The squadman has no way of determining the extent of brain damage.

Artificial respiration will be useless if any one of the preceding are missing upon the arrival of the squadmen. Because we are unable to ascertain the presence of living brain cells, we must always use every possible means to revive the victim.

(Instructor to discuss research conducted after World War II. All methods were used in this research and proved that the push-pull methods gave no exchange of air to victims. Explain that mouth-to-mouth is the preferred method because we can maintain an open air passage and can see the exchange of air by the rise and fall of the victim's chest.)

B. Rescue of the unconscious victim
1. Positioning the victim
    a. Victim placed on his back.
        (1) Mouth-to-mouth can also be given in other positions but flat on back, if possible, is most comfortable to rescuer.
        (2) If victim must be moved, be cautious with the injured.
2. Clearing the mouth
    a. Remove all foreign matter, vomit, blood, phlegm, etc.
    b. Use finger as shown in Figure 1.

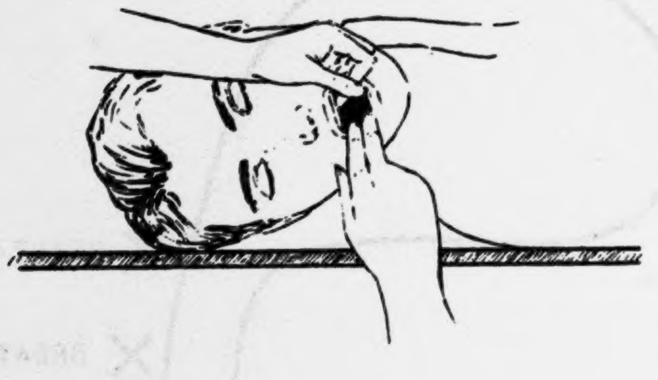


Figure 1

3. Opening the air passageway
    a. Preferred method
        (1) Place head as far back as possible.
        (2) Extend the neck.
        (3) Hold lower jaw up.
            (a) Use claw hand, insert thumb (to first joint) in victim's mouth, grasping lower jaw. (See Fig. 2)

(4) Hold jaw in this position as long as victim is unconscious.

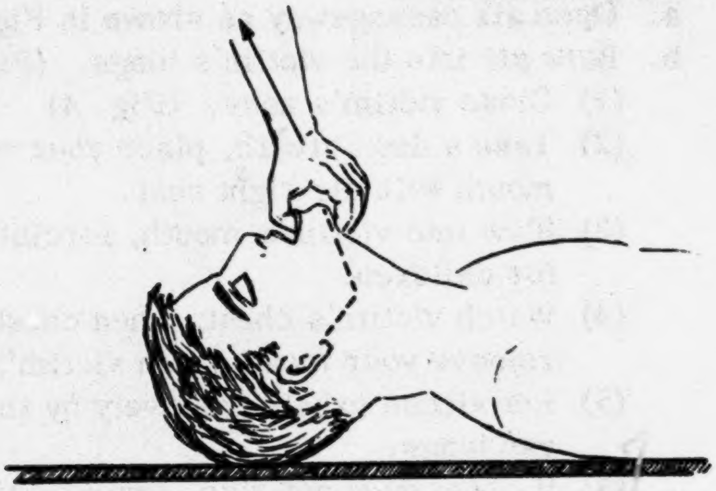


Figure 2

(5) The preferred method cannot be used if:
  - **(a) The victim is less than 3 years old.**
  - **(b) The victim is an adult whose mouth cannot be opened.**

b. Alternate method

(1) Place head in the sniffing position. (See Fig. 3)

(2) Hold lower jaw up.
  - **(a) With both hands, grasp angle of lower jaw just beneath the ear lobes.**
  - **(b) Lift lower jaw forcibly upward so that lower teeth are higher than upper teeth.**
  - **(c) If lips are shut, pull the lower lip down gently with the thumb, but never drop the chin.**
  - **(d) Hold the jaw in this position as long as victim is unconscious.**

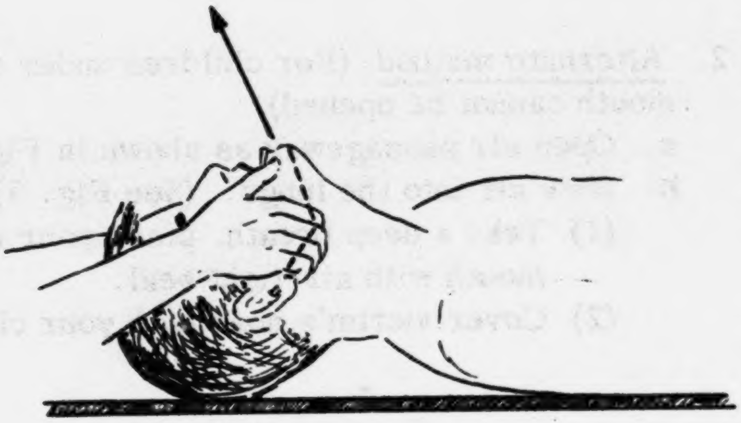


Figure 3

C. Mouth-to-mouth breathing

1. Preferred method
   - a. Open air passageway as shown in Fig. 2.
   - b. Blow air into the victim's lungs. (Fig. 4)
     - (1) Close victim's nose. (Fig. 4)
     - (2) Take a deep breath, place your mouth over victim's mouth with air-tight seal.
     - (3) Blow into victim's mouth, forcibly for adults, gently for children.
     - (4) Watch victim's chest; when chest rises, stop blowing, remove your mouth from victim's.
     - (5) Let victim exhale passively by the elasticity of chest and lungs.
     - (6) If chest does not rise, improve the support of the air passages and blow more forcibly.
     - (7) Repeat inflations 15 to 20 times per minute.

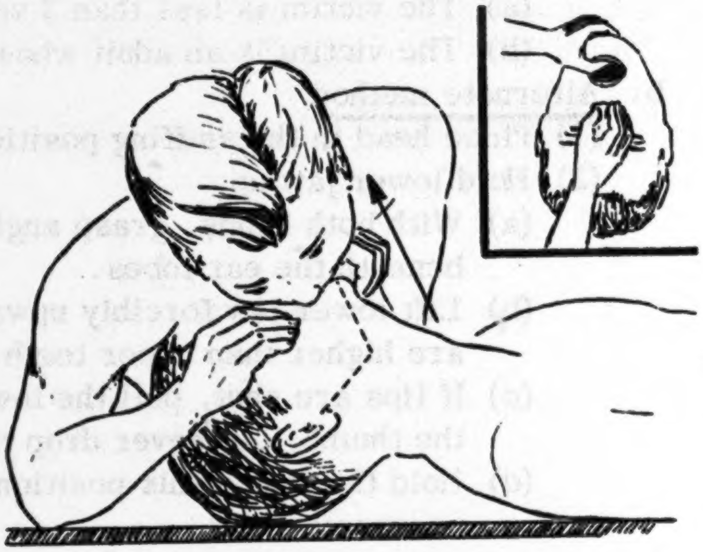


Figure 4

2. Alternate method (For children under three and victim whose mouth cannot be opened)
   - a. Open air passageway as shown in Fig. 3.
   - b. Blow air into the lungs. (See Fig. 5)
     - (1) Take a deep breath, place your mouth over victim's mouth with air-tight seal.
     - (2) Cover victim's nose with your cheek.

(3) In a baby, cover both the nose and mouth with your mouth.
(4) Blow into victim's mouth. Blow forcefully into adults' and gently into children's. In an infant use only puffs from your cheeks.
(5) When victim's chest rises, remove your mouth from victim's mouth.
(6) Let victim exhale passively.
(7) If chest does not rise, improve the support of the air passage and blow more forcefully.
(8) Repeat inflations 15-20 times per minute.

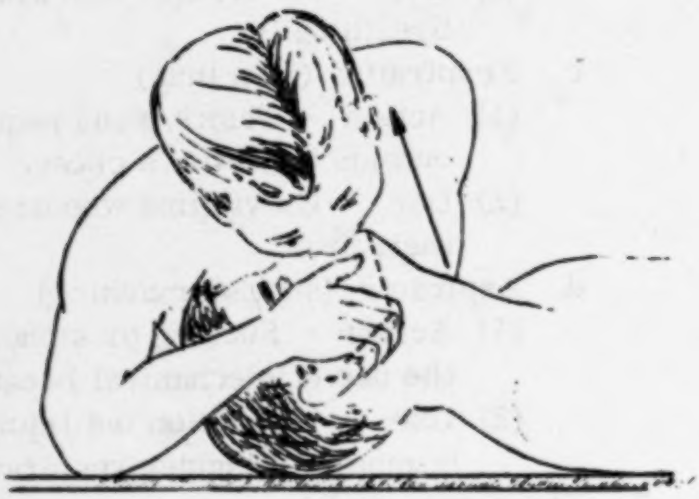


Figure 5

D. Air blown into stomach
  1. Usually result of improper technique of mouth-to-mouth.
    a. Airway partly blocked by improper position of head.
    b. Blowing may be too forceful.
  2. Air inflation of stomach is not dangerous, but it does make inflation of lungs more difficult.
    a. If stomach bulges, take a moment to press with your hand between the victim's navel and breastbone. This will cause the air in stomach to be "burped."
    b. Burping may cause victim to vomit.
      (1) Be sure to clear mouth and throat at once.

(Show film: "Mouth-to-Mouth Breathing")

Instructor note: At this point have learners perform item #1 as stated in Step III of this lesson.

E. Mechanical Resuscitation

1. Classifications of mechanical breathing apparatus.
    - a. Resuscitator
        - (1) Action - Positive and negative pressure on the inside of lungs and air passage.
        - (2) Use - On non-breathing victims only.
    - b. Inhalator
        - (1) Action - A steady flow of oxygen from a tank through a reducing valve.
        - (2) Use - On victims who are having trouble breathing.
    - c. Respirator (iron lung)
        - (1) Action - Positive and negative pressure on the outside of victim's chest.
        - (2) Use - On victims who are unable to breathe on their own.
    - d. Aspirator (suction machine)
        - (1) Action - Sucking or siphoning action to aid in the use of mechanical breathing apparatus.
        - (2) Use - To suction out liquids and foreign matter in mouth and upper respiratory tract.
2. The resuscitator
    - a. Usually three-stage machines
        - (1) Resuscitator - for non-breathers.
        - (2) Inhalator - to assist breathing.
        - (3) Aspirator - suction machine.
    - b. Usually two-cycle machines
        - (1) Positive pressure to 4 oz. P.S.I.
        - (2) Negative pressure to 3 oz. P.S.I.
            - (a) Some machines are equipped with positive and negative pressure overrides. This permits the machine to inflate and deflate lungs to pressures above those listed but still within safe limits.
    - c. Steps to be followed when demonstrating resuscitator:
        - (1) Give name of resuscitator.
        - (2) Show where tank-valve key is located and/or kept.
        - (3) Turn on oxygen (two turns)

(4) Point out tank gauge
  (a) Indicates amount of oxygen in tank you are using.

(5) In two-tank machines, use only one tank at a time.

(6) Show where and how the resuscitation stage is put into service.

(7) Use the rubber demonstration bag (if available) to show how the resuscitator inflates and deflates the lungs.

(8) Show how to inflate rubber face mask (if the type) and how it is placed on resuscitator.

(9) Demonstrate on yourself, the inflation and deflation of the lungs. Establish a breathing cycle to present the sound of machine working properly.

(10) Demonstrate to give the following sounds of machine:
  (a) Breathing for victim
  (b) Victim starts to breathe
  (c) Blockage

(11) Diagram the types of blockages and their causes.
  (a) Fluid - blood, liquid, vomitus, etc.
  (b) Foreign matter (solids) - false teeth, chewing gum, tobacco, seaweed, etc.
  (c) Tongue - dropping back blocking air passage.
  (d) Spasm - of the vocal cords.

(12) Methods to overcome blockages
  (a) Fluids - aspirate -- demonstrate how to use aspirator. Use glass of water. Show how to hold, measure, and rotate catheter.
  (b) Foreign matter - pull out at once -- use fingers, but a clamp is advised.
  (c) Tongue - insert airway. Show proper method of inserting airway. Stress holding tongue and following contour of roof of mouth. Make sure proper size airway is used.
  (d) Spasm - if all of the above have been carried out and the blockage signal is still evident, the vocal cords may be in spasm. Keep mask in place on victim and slowly roll or turn head slowly from side to side.

(13) When the blockage is overcome, the machine will resume normal breathing cycle.

(14) If victim starts to breathe on his own, an extra-trip will be heard in the normal breathing cycle.

(15) Immediately turn machine to the inhalator stage.

(16) Observe victim closely, for he may stop breathing again.

(17) When victim starts to "pink-up" oxygen should be weaned away and not shut off completely.

(18) Demonstrate (using a learner) the following:

(a) Positioning the victim - flat on back, shoulders elevated.

(b) Holding the face piece (mask).

(c) Positioning the mask.

(d) Positioning of thumb and index finger.

(e) Position of fingers under victim's chin.

F. Resuscitation of the laryngectomy

1. Describe this type victim and stress that all squadmen incorporate the phrase, "Check the neck for the laryngect."
2. Give the slide presentation and narrations for the laryngectomy.

G. Adjuncts to resuscitation

1. Briefly describe some of the equipment available.
   a. S-shaped breathing tubes.
   b. Bag resuscitator.
   c. Mouth-to-mouth resuscitator.
   d. Tube-to-mask types.

H. Extra resuscitative equipment

1. The following items should be carried with all resuscitators:
   a. Flashlight
   b. Suction catheters - sizes 12-14-16-18-20
   c Airways - set of seven
   d. Hand towel - to seal poor-fitting mask
   e. Curved kelly clamp - to assist in removing foreign matter.
   f. Spare aspirator bottle

RESUSCITATION - MANUAL AND MECHANICAL

STEP III - APPLICATION

1. Have learners return demonstration on mouth-to-mouth (using mannequin if available).
2. Have learners return demonstration on the use of the resuscitator.
3. Demonstrate use of face towel for a poor-fitting mask.
4. Demonstrate how to attach large tank to resuscitator by use of an adaptor.
5. Demonstrate how to replace empty tanks with full one in resuscitator.
6. Have learners carry out evolution in which resuscitation and transportation are carried out simultaneously.

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE #10
LESSON PLAN #9

OXYGEN THERAPY

DESIRED RESULTS:

1. To familiarize the learner with the different types of oxygen administration.
2. To develop skills in the proper use of oxygen equipment.
3. To instill in the learners the necessary safety precautions and care of equipment.

EQUIPMENT AND SUPPLIES:

1. Chalkboard - chalk and eraser
2. Oxygen equipment in use by squad being taught
3. Other oxygen administration equipment that may be available

REFERENCE:

EVCRM - Chapter 11, pages 105-117

STEP I - INTRODUCTION OF LESSON

Among the most basic equipment to be placed in the average emergency squad vehicle is the apparatus for administering oxygen. Many of the victims cared for by squadmen have a great need for highly concentrated oxygen, alone or in support of other measures. The proper administration of oxygen can prevent the condition of victims from becoming worse, or even ward off death.

STEP II - PRESENTING THE LESSON

A. Oxygen therapy
   1. Describe and explain the different size cylinders, their capacity and general use.
   2. Tanks, regardless of size, are filled to between 1800-2200 pounds per square inch.

3. To insure that the victim receives a safe and metered flow of oxygen, the following devices are incorporated:
    a. Pressure-reducing valve -- to regulate and reduce pressure as it leaves the tank.
    b. Regulator - A device that can be adjusted to administer the desired amount of oxygen to an inhalator.
    c. Flow meter - Read in liters, it gives a continuous reading as to the amount of oxygen reaching the victim.
4. Discuss the following types of oxygen administration. (Present on chalkboard)

Type	Concentration of O_2
a. Full face mask	Approaching 100%
b. Nasal mask	30-95% - the victim needs training to use this type.
c. Nasal canulas	30-40% - (poorest type)
d. Nasal catheters	40-60%
e. Tent	40-60%

5. Steps to be followed when demonstrating oxygen tanks and related equipment.
    a. Show proper removal of protective cap from large tank.
        (1) Stress danger of falling tank.
    b. Show how to "crack" a tank.
        (1) Valve facing away from squadmen.
        (2) Open cylinder valve slightly and close it quickly.
        (3) This will blow out dust in and around valve.
        (4) Always "crack" tank before attaching a regulator and/or adaptor for resuscitator.
    c. Show how to open tank with reducing valve connected.
        (1) Be sure the flow meter is closed.
        (2) Show tank gauge, indicating amount in P.S.I. in tank.
    d. Show how to adjust the flow meter
        (1) Always start at ten liters.
        (2) Then adjust flow to victim's need.
    e. Show how to connect administering apparatus to the flow meter.
    f. Show how to "shut down"
        (1) Stress how to bleed, reducing valve and flow meter by opening flow meter only after tank valve is closed.

6. Maintenance of equipment
   a. Catheter - face mask - nasal canulas
      (1) Wash all with soap and warm water.
      (2) Soak in disinfectant solution for 20 minutes.
      (3) Rinse and dry.
7. Safe practices
   a. Never use oils or grease on or near any oxygen equipment.
   b. Discuss I.C.C. law governing the why, how, and when of hydrostatic tests for all tanks.
   c. No smoking - Although oxygen will not burn, it is dangerous in that it supports combustion.
   d. All tanks should be held securely in the apparatus by the use of straps, blocks, or some other type of fixture.
8. Mass oxygen therapy: In a special emergency, supplemental equipment and oxygen in large quantites may be required.
   a. Commercial sources
      (1) Oxygen-producing plants
      (2) Industrial plants
      (3) Welding shops
      (4) Automobile repair garages
      (5) Scrap yards
      (6) Check "yellow pages" of telephone directory under "oxygen."
   b. All oxygen is U.S.P. (United States Pharmecopia) unless stated on tank.
      (1) Commercial tanks may differ in color.
      (2) Tanks from above sources may not appear as clean as medical tanks.
      (3) Be sure the word "oxygen" is on the cylinder.
   c. Improvised equipment
      (1) Insert tubing or welding hose through bottom of ordinary paper bag. Place bag over victim's face.
      (2) Make a cone of cardboard or x-ray film or similar material. Insert hose through bottom of cone and place over victim's face.
      (3) In a cardboard carton about 20 inches square, cut hole about 9 inches in diameter in bottom. Slide over victim's head, and insert hose through side. Leave top open or cut off.

STEP III - APPLICATION

1. **Assemble learners into groups.**
2. **Have each group work with a particular part of oxygen equipment.**
3. **Rotate groups.**

STEP IV - CHECKING AND FOLLOW-UP

1. **Question and answer period.**
2. **Reteach any portion of lesson not thoroughly understood.**

TEACHING GUIDE #11
LESSON PLAN #9

CLOSED CHEST HEART COMPRESSION

DESIRED RESULTS:

1. To develop the necessary skills in the application of closed chest heart compression.
2. To convey the importance of proper examination to determine if heart compression is necessary.
3. To stress the importance of continual practice and review of the closed chest heart compression procedure.

EQUIPMENT AND SUPPLIES:

1. Chalkboard - chalk and eraser
2. Mannequin properly equipped for application of closed chest heart compression
3. Film - "Pulse of Life"
4. 16 mm. movie projector and screen

REFERENCE:

EVCRM - Chapter 12, pages 118 to 125

STEP I - PRESENTING THE LESSON

For years the physicians of our nation were coping with heart stoppage by opening the chest wall and actually massaging the heart by hand. A group of researchers found that applying pressure with the hands on the outside of the chest could create the same results. It is a technique that did not necessarily need a physician on the scene to carry out. A well-trained emergency squadman can carry out this procedure until the victim can be brought to a hospital for definitive care.

Since the emergency squad is usually the first to reach the heart-stoppage victim outside the hospital, it is imperative that each and every squadman be completely trained in this new technique.

A. Closed chest heart compression

1. Symptoms

a. The victim is not breathing.

b. The victim does not have a carotid (neck) pulse.

c. The pupils of the victim's eyes do not react to light.

2. Examination

a. To determine whether the victim is breathing, place one hand over his abdomen in the area of the diaphragm. If there is no motion, no air is being exchanged.

b. To establish whether a neck pulse is present, place four fingers at the pressure point between the large neck muscle and the windpipe. If the heart is not beating, there will be no pulse.

c. The pupils of the eyes restrict when light is directed on them. If the heart is not beating, the eyes will not react to light: they will remain dilated.

3. Procedure

a. When the three listed symptoms are present, the victim must be given closed chest heart compression immediately.

b. The victim must be on a hard, flat surface.

(1) Floor, backboard, etc.

c. Mouth-to-mouth resuscitation and closed chest heart compression must be given intermittently.

(1) As soon as it is determined that closed chest heart compression is to be given, four or five breaths of mouth-to-mouth should be given.

d. If two rescuers are present, one will give mouth-to-mouth and the other will measure the chest.

e. If only one rescuer is present, mouth-to-mouth must be given first. Then the squadman proceeds to measure the victim's chest.

4. Locating the heart

a. The heart lies directly under the sternum or "chest bone."

(1) Pressure on the sternum compresses the heart and forces the blood out.

(2) Relieving the pressure will allow the heart to refill.

b. To locate region where pressure is to be applied:

(1) Place index finger of one hand at the top of "chest bone."

(2) Place index finger of other hand at the bottom of "chest bone."

(3) The lower half of this measured area is the exact location to apply the pressure.

CLOSED CHEST HEART COMPRESSION

5. Placing the hands
   a. Kneel beside victim
      (1) On same level as victim gives the best mechanical advantage.
   b. Place the butt or heel of one hand on the lower half of "chest bone."
      (1) The butt or heel of the hand should lie on chest bone with fingers pointing toward, but not touching, ribs.
   c. Place the second hand over the first. Direction of second hand is whichever is comfortable to the rescuer.
6. Applying the pressure
   a. With hands on victim's "chest bone," straighten your arms until elbows hurt.
   b. Bend forward until your shoulders are directly over your hands.
   c. Begin to apply pressure
      (1) Push directly down until "chest bone" moves 1 1/2 to 2 inches.
   d. Hold your fingers up off the victim's chest.
      (1) This helps to keep your hands in the proper place.
   e. Compress at the rate of 60 times per minute.
      (1) This compression should be practiced often to be sure of maintaining the proper rate.
      (2) If rate is too slow, not enough blood will be pumped to sustain life.
      (3) If rate is too fast, the heart will not fill properly.
7. Method for two rescuers
   a. A definite ratio must be maintained between heart compressions and lung inflations.
   b. Two squadmen working together -- the ratio is five heart compressions and one lung inflation.
   c. As one rescuer's hands are coming up at the end of the fifth compression, the second rescuer should be inflating the lungs.
      (1) The chest will rise as the hands come up.
      (2) Close cooperation will maintain a rhythm and will also save time.
      (3) If the two rescuers tire, they can change positions.
8. Method for one rescuer
   a. One squadman working alone should maintain a ratio of 15 chest compressions and two mouth-to-mouth inflations.
   b. When working alone the rescuer will not take time to put thumb in victim's mouth but will maintain air passage by holding the victim's neck up. This allows head to drop back facilitating open air passage.

9. **Use of the resuscitator**
   - a. The mechanical resuscitator should be put into play as soon as possible.
   - b. In this procedure the rescuers give 10 heart compressions and 1 inflation with the resuscitator.
   - c. Put mask on face but not air tight.
   - d. At tenth compression push mask to make it air tight and it will inflate the lungs.
   - e. If the resuscitator has the positive pressure override feature, this can be used to a great advantage to overcome some normal resistance during compression.
10. **Cartilage separation**
    - a. In older people there may be a separation of the cartilage between the ribs and the "chest bone" due to the pressure of the compressions.
    - b. This is not unusual and is not considered a complication.
11. **Child victims**
    - a. Technique is the same for children except that the use of one hand on a child's "chest bone" or two fingers for an infant is adequate.
    - b. The compression rate for children should be 80 to 100 times per minute.
12. **Transportation**
    - a. With the victim on a backboard, closed chest heart compression and resuscitation can be carried out and continued while loading and en route to the hospital.
    - b. Hospital should be notified. This will allow time for emergency room personnel to prepare equipment and drugs before the victim arrives.
13. **Conclusion**
    - a. Instructor to read the following with great emphasis!!

This newest resuscitation procedure cannot be learned just by reading material in a text. Continual practice and experience are necessary. The procedures should be reviewed often.

STEP II - APPLICATION

1. Have learners apply closed chest heart compression to a mannequin or to each other.
2. Have learners work as one rescuer and then with the two-rescuer application.
3. All learners must be checked out by the instructor on all aspects of the presented lesson.

CLOSED CHEST HEART COMPRESSION

STEP III - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE #12
LESSON PLAN #10

OPERATIONS AT A CRIME SCENE—RECORD AND REPORTS—POST-MORTEM CONFERENCE—LEGAL ASPECTS

DESIRED RESULTS:

1. To impress upon the learner the importance of preserving evidence at any assumed crime scene, keeping in mind that emergency care to the victim takes precedence over all other things.
2. To instill in the learner the value of maintaining adequate records and reports.
3. To present the post-mortem conference as a most important function in evaluating squad operations at any given emergency.
4. To discuss the sections of the "Ohio Revised Code" pertaining to squad operations and the source of legal interpretations of questions relative to squad operation.

EQUIPMENT AND SUPPLIES:

1. Chalkboard - chalk and eraser
2. Samples of various record and report forms that are used by different squads

REFERENCE:

EVCRM - Chapters 23-26, pages 307 to 327

STEP I - INTRODUCTION OF LESSON

Instructor note: Introduction of this lesson shall be presented at the opening of each topic as in step II of this teaching guide.

STEP II - PRESENTING THE LESSON

A. Operations at a crime scene
"The scene of any unusual death or accident should be treated as a crime scene until proven otherwise; however, if there is any thought that life may still be present, the care of the victim must take precedence over all other things."
1. Protecting the scene -- handle things the least amount possible.
a. The primary object to be guarded may be:
(1) A body
(2) An automobile
(3) A room
(4) An entire building

- b. The area around the primary object may require protection.
  - (1) Depending on the type of crime.
- 2. Typical procedure
  - a. Squad shall obtain the following promptly and transmit such information to a police agency:
    - (1) Name of deceased, if possible.
    - (2) Exact address and location of body.
    - (3) Telephone number where squad can be reached or is calling from.
    - (4) Apparent cause and time of death, if known.
    - (5) What assistance, if any, is needed.
  - b. Duties of first squadmen at the scene
    - (1) If victim must be moved for emergency care, mark an outline of the body.
    - (2) Do not alter scene; keep intact as is.
    - (3) Get names and addresses of witnesses and persons at the scene.
    - (4) Get name and address of person who summoned the squad.
    - (5) Note weather condition on arrival.
    - (6) Note exact position of body and victim's clothing.
    - (7) Note condition of victim's hands and any objects in hands.
    - (8) Note size and condition of blood stains, if any.
    - (9) If a weapon is found, do not touch it except in most extreme cases, and then by picking it up by the edges of the trigger guard.
      - (a) Mark location of weapon or note position if still on the person.
    - (10) All persons found at scene should be detained; admit no unauthorized persons.
    - (11) Do not remove dead body unless authorized.
    - (12) At least one squadman should remain with body until relieved by police.
    - (13) Squadmen should not theorize or gossip with citizens about the case.
    - (14) Note time of arrival at scene and names of squadmen and officers present.
- 3. Records
  - a. All pertinent information should be kept on the squad report.
    - (1) It may be subpoenaed later as evidence.

B. Records and reports

Proper reporting and record keeping are extremely important in the operation of an emergency and rescue squad. Gathering data and completing a report must not take priority over victim care or transportation of victims to a hospital. Rescue squad records can be subpoenaed into court. A complete and accurate report reflects the efficiency and professional competence of the squad.

(Refer to pages 309 to 318 of EVCRM for this presentation)

1. Responsibility for reports
    a. Determined by local authority
        (1) Fire chief
        (2) Squad chief
        (3) Squad senior officer
2. Important items on squad reports
    a. Receiving and responding to alarm
        (1) Date
        (2) Time of day
        (3) Location
        (4) Alarm received via phone, radio, call box, etc.
        (5) Time of arrival at scene
    b. Observing the condition of a victim when found:
        (1) Name and address of victim
        (2) Initial observation by squad
    c. First aid given by squad
        (1) Give description of first aid and any other important services given to victim.
    d. Medical services provided by a physician at the scene
        (1) Should be requested from attending physician.
        (2) Record name and address of physician.
        (3) Record instructions and suggestions recommended by physician.
    e. Handling of valuables
        (1) All of victim's personal items should be treated as valuable.
        (2) Make out itemized list, properly witnessed and signed.
        (3) Police or hospitals usually take this responsibility from squad.
    f. Notifying proper authorities
        (1) Squad may be required, in some situations, to notify:
            (a) Coroner
            (b) Law enforcement agency
            (c) State fire marshal's office
        (2) Always record name and address of official receiving the information.

OPERATIONS AT A CRIME SCENE -

RECORD & REPORTS, POST-MORTEM CONFERENCE, LEGAL ASPECTS

C. Post-mortem conference

A post-mortem conference is an evaluation of what has taken place during the course of an emergency. Its main purpose is to expedite future procedures and achieve a more efficient operation.

1. Why conduct a post-mortem?
   - a. To evaluate past performance.
   - b. To establish "facts" not "faults" in the particular emergency run.
   - c. To combine preplanning and the post-mortem into efficient operation.
2. How to conduct post-mortem
   - a. The report of the run should be used.
   - b. Report and discuss "facts" only, not "hearsay."
   - c. Discussion should cover "run" from the time the squad left the station until it returned to service.
   - d. Honest, constructive criticism is important.
   - e. The post-mortem must be treated open-mindedly by officer and squadmen alike.
3. Scheduling a conference
   - a. To be held as soon after the run as possible.
   - b. Local rules and regulations should be taken into consideration. (Paid or volunteer)
   - c. Post-mortems held in conjunction with training sessions are advantageous in some departments.
4. Responsibility and participation
   - a. Person in charge of squad or operations is responsible for conference.
   - b. All squad personnel should participate.
5. Items to be evaluated
   - a. A pattern should be established and followed in conducting such a session.
     (Instructor to discuss "Items to be Evaluated" - page 321 - EVCRM)

D. Legal aspects

The topics presented herein contain statutes taken from the Revised Code of Ohio having reference to emergency squads. It is by no means complete; when a question of legal interpretations is involved in a particular case, such interpretations should be left to the county prosecutor or city solicitor.

1. The following statutes shall be discussed:
   (Refer to Chapter 26, EVCRM)
   a. Definitions of emergency vehicles
   b. Emergency vehicles have right of way
   c. Proceeding past red or stop signal
   d. Excepted from speed limitations
   e. Horns, sirens, and warning devices
   f. Liability of municipal corporations for operations of vehicles
   g. Purchase of fire fighting equipment
   h. Contracts for fire protection
   i. Notification in case of death by violence or suicide
   j. Notification by physician in case of death by violence or suicide
   k. The "Good Samaritan" law

STEP III - APPLICATION

1. Ask learners to present actual experience in regard to all sections of this lesson.
2. Discuss this lesson as it may pertain to the particular squad you are teaching.
3. If possible, present lines of communication with local law enforcement agencies, coroner, county prosecutor, and city solicitor of the squad you are teaching.
4. Show samples of various records and reporting forms in use by different squads.

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE #13
LESSON PLAN #1

RESCUE CARRIES AND DRAGS

DESIRED RESULTS:

1. To acquaint the learner with the principles governing rescue practices.
2. To learn the various carries and drags necessary to effect rescue.

EQUIPMENT AND SUPPLIES:

1. Chalkboard, chalk and eraser
2. Blankets
3. Ladders
4. Rope for slides

REFERENCE:

EVCRM - Chapter 14, pages 149-164

STEP I - INTRODUCTION OF LESSON

An important aspect of rescue work is the successful removal of victims in situations where a stretcher or backboard cannot be used. Squadmen must be able to carry or drag victims quickly to safety in a variety of emergency situations with minimum risk to the victims and to themselves. They must be prepared to rescue people who are injured or unconscious.

STEP II - PRESENTING THE LESSON

A. Rescue principles and practices.
   1. Explain that rescue is the removal of human beings from places involved in fire or other disaster. Questions to be considered regarding rescue are:
      a. Are there any people in the building?
      b. If so, are they in danger?
      c. Have there been cries for help?
      d. Can the people be rescued?
      e. How can they be rescued?
      f. Has any information been given by persons who have escaped from the building?
      g. Has any information been given by neighbors or bystanders regarding people in the involved building?

2. With the previous questions answered, the officer in charge should determine if anyone is trapped in the building.
    a. A careful search should be made when there is a chance of anyone having failed to escape from the involved building.
        (1) Children may hide in closets, under beds and furniture.
        (2) Adults may be found by windows or doors they have failed to open.
        (3) Remember - it takes only a small amount of heated air, gas, or smoke to render a person unconscious.
3. Essential information necessary to meet rescue problems intelligently are:
    a. Construction and interior layout of building involved.
    b. Number of people likely to be in building.
    c. Location of interior and exterior stairways.
    d. Location of exits.
    e. Openings to roofs of adjoining building which could be used for rescue.
4. Time and nature of occupancy have direct relation to rescue problems.
    Remember - "Panic has been the major cause of death in places of public assembly."
    a. Hotel fires more serious in early morning hours.
    b. School fires more serious during school hours.
    c. Age, sex, and physical condition of occupants may make rescue more difficult.
5. Weather conditions have an important bearing on rescue problems.
    a. In winter, storm windows may create entry problem.
    b. Snow and ice will slow up rescue operations.
    c. Low temperature plus exposure may endanger the health of victim after rescue.
6. Rescue procedures will differ from case to case:
    a. No set rule to follow.
    b. Time is always pressing and people must be rescued quickly.
    c. Rescue is a teamwork operation, and squadmen must be drilled regularly.

B. Carries and drags
    1. Explain that in fire situations, injured and unconscious victims must be rescued quickly and safely.

2. Carries and drags may be the only way to accomplish this operation.
3. Drags must be used when victims are too heavy to carry. (Demonstrate and practice all of the following carries and drags. Screen learners for recent operations, ruptures, etc. Excuse all who are not physically fit.) (Refer to appropriate figures illustrated in the text EVCRM)
    a. Chair carry - Fig. 1, p. 151
    b. Fireman's carry - Fig. 2, p. 152
    c. Carrying in arms - Fig. 3, p. 152
    d. Carrying astride back - Fig. 4, p. 153
    e. Pack strap carry - Fig. 5, p. 153
    f. Front piggy back - Fig. 6, p. 154
    g. Two-man seat carry - Fig. 7, p. 154
    h. Carrying by extremities - Fig. 8, p. 155
    i. Three-man carry - Fig. 7, p. 154
    j. Clothes drag - Fig. 10, p. 157
    k. Fireman's drag - Fig. 11, p. 157
    l. Blanket drag - Fig. 12, p. 157

C. Ladder rescue

(Demonstrate and practice the following. Refer learners to figures and illustrations as indicated.)

1. Sliding an unconscious victim down a ladder. Fig. 13, p. 158
2. Walking a victim down a ladder. Fig. 14, p. 158
3. Walking a woman or child down a ladder.
4. Sliding a victim down a ladder across arms. Fig. 16, p. 159

D. Care of victims after rescue

1. Explain that care must be taken to prevent victims that have been rescued from returning to building.
    a. The duty of the squadman does not end after the rescue.
    b. The victims should be supervised and properly cared for after being brought to safety.
2. Care of infants:
    a. Sudden drop in temperature could cause pneumonia or other illness.
    b. Make sure they are properly covered.
    c. Protect their face.
    d. Deliver to competent person.
3. Care of children:
    a. If left alone they may wander around and be injured.
    b. They may return into building to get a toy or pet.
    c. Deliver to a competent person.

4. **Care of the sick:**
   - a. **Victims with contagious disease.**
   - b. **Victims with non-contagious disease.**
5. **Care of the aged:**
   - a. **Place in custody of a competent person.**
   - b. **Squadmen should bring out cherished objects, if possible.**
   - c. **Remove victims from fire area, as seeing their possessions burn may cause a heart attack, etc.**

E. Rope slide

1. **Explain that on some occasions ladders or other tools are not available and the squadman must use a rope slide to save himself and/or the victim.**
2. **Placing the sliding rope in service. (Explain procedure as is on page 161 of text. Conduct outside demonstration if possible.)**
3. **To slide rope with a life belt - one man. (Explain procedure as is on pages 162-163)**
4. **To slide rope with a life belt - two men. (Explain procedure as is on pages 163-164)**

F. Radiation rescue

1. **Squadman's protection against radiation is:**
   - a. **Time**
   - b. **Distance**
   - c. **Shielding**
   - d. **Gas masks**
2. **Remove victim with as little contact as possible.**
3. **Give a minimum amount of first aid; call doctor.**

STEP III - APPLICATION

1. **Have learners apply the different carries and drags.**
2. **Have learners apply the different ladder rescues. (Indoors or outdoors, depending on weather and/or available space.**

STEP IV - CHECKING AND FOLLOW-UP

1. **Question and answer period.**
2. **Reteach any portion of lesson not thoroughly understood.**

TEACHING GUIDE #14
LESSON PLAN #1

FORCIBLE ENTRY

DESIRED RESULTS:

1. To acquaint the learner with the different methods of forcefully making entry into a building when all accessible doors and windows are locked.
2. To acquaint the learner with the ways of using rescue tools efficiently when making forcible entry into a building.
3. To have the learner become efficient in the methods of forcible entry so as to minimize property damage, protect himself, reduce hazards to life, and create good public relations.

EQUIPMENT AND SUPPLIES:

1. Chalkboard, chalk and eraser
2. Forcible entry tools - axe, crowbar, pike pole, etc.
3. Use doors and windows in classroom to illustrate how they open and close (in or out, how they are hinged and locked, etc.)
4. Power tools (if available)

REFERENCE:

EVCRM - Chapter 16, pages 175-184

STEP I - INTRODUCTION OF LESSON

The definition of forcible entry is, "gaining entrance into a burning building or other buildings where an emergency exists; using a forceful means when all avenues of entrance are locked or inaccessible, resulting in a minimum amount of delay and property damage."

To perform efficiently when making forcible entry requires complete knowledge of the tools that can be used and skill in the use of tools. Knowledge of building construction is important, such as: The different types of windows, how they are set in their frames, how they open (in or out); the various types of locks on doors and windows (panic hardware, etc.); the various types of roofs, wood, concrete, concrete slab, etc.

Coordination and application of the knowledge of building construction and use of forcible entry tools will enable squadmen to rapidly gain entrance into a locked building with a minimum of property damage.

STEP II - PRESENTING THE LESSON

A. Show and describe tools (If available)
  1. Various types of axes
  2. Claw and Kelly tools
  3. Roof cutter
  4. Wrecking bar, crow bar, Hux bar
  5. Door openers
  6. Battering rams
  7. Power tools

B. Where entry may be made
  1. Breaking glass, including tempered glass
  2. Various types of doors
  3. Various types of windows, including storm windows
  4. Roof - skylight, cock loft or scuttle hole cover
  5. Gratings - dead lights, barred windows
  6. Breaching walls
  7. Partitions and ceilings

C. How entry can be made
  1. Breaking glass (Fig. 1, p. 175, EVCRM)
    a. Use flat side of fire axe.
    b. Stand to one side and strike the upper part of glass first.
    c. Prevents glass from sliding down axe handle and cutting hands.
    d. Remove all jagged pieces from sash.
    e. Wire glass - cut at edge of sash with blade of the axe.

The use of tempered glass or full vision doors in modern buildings is increasing rapidly. Usually, there is no frame around glass and the locking hardware is at the top or bottom. The glass is much thicker than ordinary plate glass and is heat tempered. The tempering produces high tension stresses in the center of the glass and compression stresses at the exterior surface. Tempering increases the flexibility and the strength approximately four times. It is several times more resistant to shock, pressure and impact and will withstand without breaking, temperatures of 650° on one side, while the other side is exposed to atmospheric temperatures.

FORCIBLE ENTRY

The doors are custom built and are very costly (several hundred dollars) and six to eight weeks time is required to produce a replacement. A tempered glass door should never be broken if any other means of entry is available.

The glass cannot be broken by blunt instruments. Tests have shown that a sledge hammer and the heel end of a ladder used as a battering ram by firemen, failed to break the glass.

To break the glass, a sharp pointed instrument must be used to penetrate the hard exterior surface of the glass. If it is absolutely necessary to break the glass, use the pick end of a fire axe. The following procedure is recommended: If a CO^2 extinguisher is available, apply the gas to the door (sudden cooling will cause contraction) then stand to one side, face away from the door and strike the door a sharp blow with the pointed end of the axe. As the hard surface is penetrated, the glass will disintegrate into small pieces. Remember, as the glass is being broken, turn face away from the door. This serves as a protective action against eye injury.

2. Entry through doors
   (Refer learners to Figs. 2-8, pages 176-177)
   a. Before forcing a door, make sure it is locked. Try opening it by hand.
   b. Residential doors open inwardly; public doors should swing out.
   c. Select tools best adapted.
   d. At times, it is advisable to break glass to force entrance because it is easy to break and most easily replaced.
   e. If hinged side is exposed, remove hinges.
   f. If door has glass, break glass and then manipulate lock from the inside.
   g. Revolving and steel doors offer great resistance.
   h. Method of collapsing revolving doors should be learned during inspection tours.
   i. Method of opening steel doors should be studied before fire or other emergency occurs.

3. Entry through windows
(Refer learners to Figs. 9-10-11, p. 178 in text)

- **a. General types - factory, casement, basement and check-rail.**
- **b. Determine whether the window can be opened before forcing entrance.**
- **c. Select proper tools.**
- **d. Avoid unnecessary damage.**
- **e. Recommended procedure of making entry through storm windows and storm doors.**
  - **(1) Break glass and unlock from inside.**
  - **(2) Rather than causing damage to metal frame.**
  - **(3) Wood storm doors and windows may be forced.**

4. Making entry from roof
(Refer learners to Figs. 12-13-14, pages 179-180)

- **a. Types of roofs - wood, concrete, slab, etc.**
- **b. Types of roof covering - metal, slate, asphalt, tar and gravel, etc.**
- **c. Remove roof covering exposure sheathing**
  - **(1) Sheathing - usually 3/4" thick and may be tongue and grooved.**
  - **(2) Plywood - 1/2" thick and 4' x 8' size is used extensively.**
- **d. When cutting holes with a fire axe, use short, quick strokes.**
- **e. Cut at 45° angle to the grain of wood rather than straight across.**
- **f. Always cut as close to the rafters, joists and studs as possible.**
- **g. When cutting roof boards, always stand on the windward side.**
  - **(1) Complete cut before removing any boards.**
  - **(2) Stand on the windward side and remove the boards with the pick end of an axe.**
    - **(a) Start with the board farthest from you.**
- **h. If plywood is used instead of sheathing, remove an entire section.**
- **i. Pike pole may be needed to pierce ceiling below.**

5. Entry through skylight, cock loft, or scuttle hole cover
    a. Skylight - use pick end of axe to pry up on the frame. (Fig. 15, p. 181)
        (1) On some skylights, the bottom section of the frame around the glass can be removed.
        (2) If the skylight cannot be pried up or the glass removed:
            (a) Break the glass and remove the jagged edges.
            (b) Reach inside and release hooks or bolts.
    b. Cock loft and scuttle hole covers - use the same prying procedures.
        (1) If this method is not successful, it must then be cut open with an axe.
6. Entry through gratings, dead lights and barred windows
    a. Gratings may be lifted off their sill by prying upward with an axe or crow bar.
        (1) If locked and hinged, break the lock and follow the same prying procedures.
    b. Dead lights - break the seal around the steel framework that holds the glass dead light discs.
        (1) After seal is broken, remove the steel framework.
    c. Barred windows normally set in masonry can be removed by:
        (1) Strike the bar with a sledge hammer, ten inches above the sill.
            (a) Causing it to bend and break loose from sill.
        (2) Strike the masonry sill with a sledge hammer directly in front of the bar, breaking away the masonry.
        (3) Use acetylene cutting torch to cut the bars.
        (4) Large bolt cutters may be used.
7. Entry by breaching walls
    a. Brick walls - remove one brick with a pick-headed axe or other suitable tool.
    b. After removal of one brick, two men should grasp the battering ram and swing the ram back an arm's length.
        (1) Quickly thrust the ram against the wall with a slight lifting motion as it strikes the brick.
    c. Remove bricks one at a time. Hole should be opened in a diamond shape to keep from weakening the wall.
8. Entry through partitions and ceilings
    a. Partitions
        (1) Spread a tarpaulin on the floor beneath the spot hole is to be made.
        (2) With blade of axe, cut down along the stud.

(3) Cut hole between studs. Be as neat as possible. (Fig. 17a-17b, page 182)
(4) Do not tear off lath.
(5) Studs usually set 16" on center and can be found by sounding the wall.

b. Ceilings

(1) When opening ceilings from below, the pike pole or plaster hook is used. (Figs. 19-20, page 183)
(2) Demonstrate the proper method of removing plaster, lath, metal lath and metal ceiling.

STEP III - APPLICATION

1. **Have learners return demonstrations of opening windows, doors, etc. in building.**
2. **Have learners select proper tool for a particular opening job and explain its proper size.**

STEP IV - CHECKING AND FOLLOW-UP

1. **Question and answer period.**
2. **Reteach any portion of lesson not thoroughly understood.**

TEACHING GUIDE #15
LESSON PLAN #2

ROPE AND RIGGING

DESIRED RESULTS:

1. To acquaint the learner in the basic knowledge of the construction and care of rope.
2. To develop in the learner the ability to tie knots and hitches that are commonly used in the rescue service.
3. To develop in the learner the use of ropes and related materials that require specific skills to extract victim(s) from areas of accident and/or hazards.

EQUIPMENT AND SUPPLIES:

1. Samples of rope made of different material
2. Rope long enough to secure victim to army-type stretcher for raising or lowering (usually 40' in length, 1/2" in diameter)
3. Rope for each learner, long enough to tie knots
4. Block and tackle and snatch block
5. Two ladders (for ladder sheerlegs)
6. Stretcher (army type)
7. Backboard with footrest
8. Chalkboard, chalk and eraser
9. Blankets for wrapping victim

REFERENCE:

EVCRM - Chapter 20, pages 227 to 256

STEP I - INTRODUCTION OF LESSON

Rigging is essential to many rescue operations which necessitate lifting or hoisting. It is imperative that rescue personnel know how to use ropes, cables, blocks, ladders, gin poles and other rigging equipment in rescue operations. Mastering the use of such equipment can come only after much practice and drill. This lesson describes the basic rigging equipment and explains some application.

Rescue equipment is usually thought of as being carried on heavy rescue vehicles only. Such is not the case, for many light rescue vehicles can be equipped with the basic equipment to accomplish many rescue procedures.

The members of every emergency squad should be able to tie the various knots for each operation of the rescue service. The knot used for the particular job must be a knot that is easy to tie, will hold securely, and can be untied quickly by another squadman.

STEP II - PRESENTING THE LESSON

A. Rope
   1. Construction of rope
      a. Manila (show sample)
         (1) Comes from the abaca plant or wild banana plant in the Philippine Islands.
         (2) Considered best for the rescue service as it is the strongest of all natural fiber ropes.
      b. Sisal (show sample)
         (1) Comes from the henequin plant, grown in Yucatan, East Indies and Africa.
         (2) Is only 75% as strong as manila fiber.
      c. Hemp (show sample)
         (1) Comes from the hemp plant which grows in Italy, Russia and the U.S.
      d. Nylon (show sample)
         (1) Comes from synthetic fibers.
         (2) Tensile strength is two to three times greater than manila rope.

   Place following comparison on chalkboard

TENSILE STRENGTH COMPARISON

3 strand manila rope	3 strand nylon rope
1/4" = 600#	1/4" = 1,800#
1/2" = 2,650#	1/2" = 6,900#
3/4" = 5,400#	3/4" = 15,000#

         (3) Has service life four times greater than manila rope.
         (4) Weighs 40% less than manila rope.
         (5) Slick finish reduces friction but increases slippage of knot (unties).
      e. Rope is constructed by:
      (Show samples of the following)
         (1) Twisting fiber together to make a yarn.
         (2) Yarns are twisted together to make a strand.

    - (3) Strands are twisted together to make a rope.
    - (4) Reversing twist in every step in building up a rope locks it together.
    - (5) Twist in one direction offers an equal resistance to twist in opposite direction.
    - (6) Direction of twist is indicated by terms "left hand" and "right hand" or "with the sun."
  - f. Explain reasons for stretching and how new rope should be stretched.

2. Types of rope
   - a. Three strands laid up in a right hand direction and having "hawser-laid" rope.
     - (1) Most rope used in rescue service is hawser laid.
   - b. Four strands laid up in a right hand direction having a central core will form a "shroud-laid" rope.
     - (1) Used in power transmission
   - c. Three hawser-laid ropes laid up in a left hand direction form a "cable-laid" rope.
     - (1) Used in well drilling and mining.
3. Size and weight of rope
   - a. Size measured by giving its diameter in inches.
   - b. Sold by weight.
4. Strength of rope
   - a. In choosing a rope for a given purpose, a large margin of safety should be used.
   - b. Breaking strength should be about seven times the load to be lifted (calculated in pounds)
   - c. Diameter squared x 7200 equals breaking strength (new manila rope).
   - d. Breaking strength divided by 7 equals safe load or working strength (new manila rope).
5. Inspection of rope
   - a. Rope should be checked after each use and at least every six months if not used.
   - b. Examination should determine condition of rope through its entire length.
   - c. Exterior inspection (Demonstrate proper method)
     - (1) Abrasions (broken fibers)
     - (2) Cuts
     - (3) Extremely soft
     - (4) Decayed or burned by high temperature or chemicals

- d. Interior inspection
  (Demonstrate proper method)
  - (1) Separate strands at three foot intervals
  - (2) Examine for:
    - (a) Broken fibers
    - (b) Fine powder - indicating presence of grit
    - (c) Mildew or mold
    - (d) Change in color of fibers
- e. Rope when stored:
  - (1) Should not be exposed to dampness or sharp-edged tools.
  - (2) Should always be coiled and ready for use.

6. Use of rope
   - a. Sizes
     - (1) Sizes to be carried should be from 1/4" to 1" in diameter and in length of 100 to 150 feet.
   - b. Uses
     - (1) To hoist ladders, tools and appliances
     - (2) As a life line in rescue work
     - (3) To aid in maintaining lines of restrictions to bystanders
     - (4) To lash ladders together to extend their length
     - (5) For wrecking operations
     - (6) As guy lines and work lines when hoisting or lowering victims or equipment

B. Knots, bends and hitches
(Explain the following)

1. A knot is a knob formed in a piece of rope by interweaving its strands.
2. A bend is a method of fastening one rope to another or to a ring, loop, etc.
3. A hitch is a temporary knot or noose by which a rope is fastened around a timber, post, etc., so as to be readily untied.
4. Most knots ordinarily used, strictly speaking, are bends.
5. Knots stay tied due to frictional resistance of the rope.
6. Usefulness of a knot should be judged by:
   - a. Rapidity by which it can be tied.
   - b. Ability to hold fast when pulled tight.
   - c. Ease by which it can be untied.
7. Effect of knots, bends and hitches on the strength of rope.
   - a. Rope has maximum strength when strain is applied evenly to all fibers.
   - b. When rope is tied, weakest part of rope is at the knot.
   - c. The shorter the bend, the less the tensile strength of the rope.

d. Decrease in tensile strength when using knots is:
(Place following on chalkboard)

Square knot	50% loss
Bowline	40% loss
Clove hitch	35% loss
Short splice	20% loss
Becket knot	50% loss

8. Knots and hitches the squadmen need to know. (Demonstrate how to tie each of the following knots and hitches and have learners tie each) (Place a straight ladder up on two supports about waist high. Have learners tie knots and hitches on the rails. Position learners on each side of the ladder)

a. Half-hitch
    (1) Used either alone or in combination with other knots.
    (2) Free end of rope brought around tension end and then brought under itself.

b. Square knot
    (1) Used in tying bandages in first aid and tying together two ropes of the same size.
    (2) Will not slip - draws tight and is easily untied.

c. Clove hitch
    (1) Used for hoisting or lowering small equipment. Also to fasten a rope to a stake, pipe or post.
    (2) Can be tied by two methods.

d. Bowline
    (1) Used whenever a loop is desired in the end of a rope.
    (2) Never slips and is easily untied.
    (3) Used in raising and lowering victims and equipment.
    (4) Used as a life line
        (a) Place rope around man's chest just under armpits and tie knot.
        (b) Position knot between shoulder blades.

e. Bowline on a bight
    (1) Made by forming a loop at some point in a rope other than at the end.
        (a) Easily untied.
        (b) Used to form a saddle for raising or lowering men.

f. Chimney hitch
    (1) Used to obtain a tight line or to rescue objects.
    (2) Knot can be slipped along main rope to take in or let out slack and will hold its position wherever set.

- g. Sheep shank
  - (1) Used as a temporary measure to shorten or strengthen a rope.
- h. Becket knot
  - (1) Used to fasten two ropes of different sizes together.

C. Rope splicing
(If class schedule permits, discuss material as found in EVCRM pages 235 to 240)

D. Rope coils
- 1. It is essential to have rope properly coiled and ready for immediate use in order to render efficient service. (Demonstrate method of coiling rope and impress upon group the importance of each department having a rope coiler) (Refer to pages 240 to 242 of EVCRM)
- 2. Benefits derived from having rope coiled properly:
  - a. Neatness
  - b. Ease in carrying
  - c. Speed in using
  - d. Prevents snarls
- 3. Coil for throwing rope:
  - a. Necessary to throw rope.
  - b. Cannot be done unless properly coiled for throwing.
  - c. Practice necessary to throw correctly.
  - d. Must be able to judge right amount of rope in each coil for distance.

E. Cable
- 1. Is a "wire rope" made of many moving parts.
- 2. Will corrode and rust when exposed to elements.
- 3. Must be kept free from rust, acids, and other chemicals.
- 4. Store in dry place and inspect periodically.
- 5. Proper lubricant should be applied to allow strands to "move" easily.

F. Block and tackle
- 1. Provides a mechanical advantage in lifting heavy objects.
- 2. A pull of 100 pounds on a 3 to 2 combination tackle will lift an object weighing 500 pounds.
- 3. Show and discuss the parts of a straight block.

G. Snatch block
- 1. A single block with an opening and locking device on one side.
- 2. Used to achieve a change of direction in pulling.

H. Gin pole
   1. Consists of single pole held in position by four guy lines.
   2. Used as a base for the block and tackle lashed to the top.
   3. Can be made from any timber.
   4. Draw and discuss the parts and operation of a gin pole. (Figs. 45-46-47-48 on page 248 of text)

I. Ladder gin pole
   1. Used to erect gin when suitable poles or timbers are not available.
   2. Attach a rope or sling around the rails near the top of the ladder to attach the block and tackle.
   3. Fasten two guy lines, one on each rail where sling is secured.
   4. Raise ladder to desired position and anchor the guy lines. (See Fig. 49, page 249)

J. Ladder sheerlegs
   1. Sheerlegs constructed with ladders cannot be drifted and, like tripods, they are restricted to vertical lifting.
   2. Place one ladder on top of another and lash the beams together loosely at the top.
   3. Turn the ladders on their beams and spread the unlashed ends to form a "V".
   4. At the lashings attach a sling to support the block and tackle and fasten guy lines to each side at the lashings.
   5. Raise the ladders and anchor the guy lines. Anchor the ladders at the bottom to prevent spreading.

K. Body tie
   1. This tie is an adaptation of the bowline on a bight to be used when securing an individual who is to be raised or lowered during rescue.
   2. In tying it, three feet of the free end must be left outside the knot.
   3. Either loop of the bowline is slipped over each leg of the individual to be raised or lowered. Draw loops up as far to crotch as possible.
   4. Throw a half-hitch under the arms.
   5. Throw a bight in the standing line in front of the chest.
   6. Pass the loose end of the rope through the bight, then draw tight making a firm knot.

L. Horizontal rescue of victim
   1. One point suspension
   2. Four point suspension
   3. With litter (army or stokes stretcher)
   4. Fracture board (backboard)
   5. Improvised litter (ladder)

M. Vertical rescue of victim
  1. With fracture board (backboard)
  2. Use of ladder

N. Securing victim for rescue
(Refer to Figs. 55-56, page 251 EVCRM)
  1. Wrapping victim
  2. Securing victim to litter
  3. Tying wrapped victim to litter

O. Discuss the following:
(Refer to pages 254-255-256 of EVCRM)
  1. Making wire rescue
  2. Lowering victim from a height
  3. Actual rescue operation

STEP III - APPLICATION

1. Have each learner perform the following:
   - a. Tie the basic knots of rescue
   - b. Thread and use the block and tackle
   - c. Construct gin pole
   - d. Construct ladder gin
   - e. Construct ladder sheerlegs
   - f. On each other apply the approved body tie.
   - g. Rig victim for horizontal and vertical rescue

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE # 16
LESSON PLAN #2

SHORING AND TUNNELING

STEP I - INTRODUCTION OF LESSON

In emergency rescue operations it is sometimes necessary to support a damaged structure or cave-in or to provide bracing for walls and ceilings. All shoring and tunneling must be done rapidly, but safety must not be sacrificed for speed.

Only the amount of shoring or tunneling required for safe removal of victims and rescuers should be carried out by the squad. Make no attempt to restore any structure to its original position.

STEP II - PRESENTING THE LESSON

A. Sizing up the rescue
  1. Location and number of people trapped
  2. Type of construction and materials to be worked in
  3. Victim of cave-in with head exposed
  4. Victim is completely covered

In either case care must be taken to protect the victim from added injury. Size up the situation and plan your approach before action is taken.

B. Approaching a victim
  1. Distribute your weight over the largest area possible.
     a. May be necessary to crawl on hands and knees or stand with legs wide apart.
  2. Use long-handled shovels when digging.
  3. Approach the victim from behind.
  4. Administer oxygen as soon as head is uncovered.

C. Shoring and tunneling
  1. Give examples where this type of rescue procedure might be used.
     a. Explosions, cave-ins, etc.
  2. Discuss importance of preplanning
     a. Condition of equipment on hand
     b. Availability of extra equipment
     c. Availability of heavy construction equipment
     d. Where and who to call for such heavy equipment

3. Draw on chalkboard and discuss:
    a. Coffer-dam
    b. Raked shore
    c. Flying shore
        (1) Timber wedges
    d. Tripods and their use

D. Techniques and tools
(Discuss each of the following items)
1. Use of timbers and wedges
    a. To be safe and secure to both victim and rescuer
    b. May be necessary for rescue teams to work in relays
2. Minor accidents may involve the use of only:
    a. Rope, shovels, pail and carpentry tools for shoring
3. Major accidents may demand the use of:
    a. Bulldozers, power shovels, drag lines, trucks, etc., with skilled operators
4. Dangers of further injury
    a. Extreme care to be used when digging for victim, especially when using power equipment.
5. Avoiding cave-ins
    a. Important to prevent edges of excavation from further cave-ins when raising victim
        (1) Use tripod rigging
        (2) Ladder laid horizontally
        (3) Aerial ladder
6. Hazards to squadmen
    a. Accumulation of toxic gases
        (1) Use self-contained breathing apparatus
    b. Hazards from utilities require notification of:
        (1) Gas company
        (2) Electric company
        (3) Water department
7. Cave-in victim care
    a. Before moving the victim, the following may be required:
        (1) Resuscitation
        (2) First aid
        (3) Professional attention
        (4) Request for spiritual assistance
            (a) In all emergencies, spiritual assistance requests should always be granted.
8. Review and discuss the typical cave-in rescue on pages 261 to 264, figures 7 to 12 of EVCRM.

SHORING AND TUNNELING

STEP III - APPLICATION

1. If possible to obtain a construction site, assimilate the rescue procedures involving shoring or tunneling.
2. If no site is available, use a thorough chalkboard demonstration.

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE #17
LESSON PLAN #3

GAS MASKS

DESIRED RESULTS:

1. To emphasize the importance and necessity for using gas masks to protect squadmen from the poisonous and toxic atmospheres which exist or develop during emergency operations.
2. To acquaint the learner with the characteristics of common gases encountered at the scene of an emergency.
3. To familiarize the learner with the various types, operations, limitations, uses and care of respiratory equipment.
4. To emphasize methods and needs for training in this area.

EQUIPMENT AND SUPPLIES:

1. Chalkboard, chalk and eraser
2. Gas masks; filter, self-contained and oxygen generating
3. Smoke chamber and materials for making smoke
4. Charts of the different type canisters
5. Cut-aways of canisters

REFERENCE:

EVCRM - Chapter 17, pages 185 to 210

STEP I - INTRODUCTION OF LESSON

Although a gas mask is not the most commonly used piece of equipment carried on an emergency vehicle, it can without reservation be considered the most important. Too often the life of a rescuer has been sacrificed in an effort to rescue someone trapped or overcome in a gas-filled area because the rescuer did not protect his respiratory system while attempting the rescue. In this modern age of chemicals, plastics, refrigerants, industrial processes, and developments, protecting those who must operate in these atmospheres during emergencies is a fundamental duty.

GAS MASKS

In addition to the hazard caused by a poisonous gas, squadmen must be aware of the potential explosion hazard. It is suggested that emergency squad personnel survey the industrial, manufacturing, and commercial areas of their community to determine what hazardous gases are being used, stored or transported.

(Read the section of the Ohio Revised Code on page 186 of the EVCRM as it pertains to gas masks)

Continuous training and practice in the use of this equipment is a necessity.

STEP II - PRESENTING THE LESSON

A. Importance to the squadmen
  1. The life safety of squadmen is the responsibility of the officers
    a. By training
    b. When to use
  2. Rule should be that no one be allowed in the area of fire and/or contamination unless equipped with proper respiratory equipment
  3. Protection from radioactive materials
    a. To be worn from time of arrival at scene until hazard no longer exists
    b. Necessity of self-contained unit
  4. Suggest survey of industrial and commercial areas
    a. Hazardous gas locations
    b. Cooperation with staff chemists and engineers
    c. Good public relations
  5. Explosive and poisonous properties of gases and precautions to be taken:
    (Refer learners to chart, pages 188-189 of EVCRM)
    a. Sparks
    b. Light switches
    c. Use of ferrous tools and equipment

B. Types and uses of gas masks
  1. Respiratory equipment is classified as follows:
    a. Filter type
    b. Air or oxygen supplied from outside source
    c. Self-contained
  2. In some instances, respiratory protection alone is not enough.
    a. Some gases may harm body on contact.
    b. Protective clothing may be necessary.

3. Filter type canister masks
    - a. Several types manufactured
    - b. Protects against some kinds of smoke and poisonous gases
    - c. Has definite limitations
        - (1) Atmosphere must contain over 16% oxygen
            - (a) Check with flame or safety lamp
        - (2) Not effective when atmosphere contains over 2% by volume of poisonous gases
        - (3) Heavy-bodied smoke such as from burning plastics impairs operation by clogging intake and interior of mask
    - d. Major parts of mask are:
        - (1) Canister with harness and carrying case
        - (2) Facepiece with headbands and flexible tubing
        - (3) Timer (mechanical or window indicator type)
    - e. Canister (plain type)
        - (1) Painted red
        - (2) Other colors for specific gases
        - (3) Approved for 2 hours in atmospheres containing carbon monoxide
        - (4) Becomes warm when carbon monoxide is present
        - (5) Degree of warmth depends on concentration of gas
        - (6) Heat is formed as carbon monoxide is changed to carbon dioxide by catalyst (hopcalite)
        - (7) Store in cool, dry place
        - (8) Seals should not be removed until placed into service
        - (9) In-service canisters should be replaced once a year, if the seal has been removed, even though never used
        - (10) Always remove seals when ready for use
        - (11) Test by inhaling and exhaling
            - (a) Inhale only through top opening
            - (b) Exhale only through bottom opening
            - (c) Audible click will indicate opening and closing of valves
        - (12) Drying agents protect catalyst (hopcalite) from normal water vapor during two hour use
        - (13) Extreme conditions under which canister may be ineffective against two hour normal water vapor absorption:
            - (a) Relative humidity over 85%
            - (b) Extended periods of heavy breathing (over 25 liters per minute)
            - (c) Air saturated by "fog" or "wet water"
            - (d) Accidental introduction of water into canister

f. Canister (window indicator type)
  (1) Painted red
  (2) Other colors for specific gases
  (3) Approved for two hours in atmospheres containing carbon monoxide, unless subjected to excessive moisture
  (4) Becomes warm when carbon monoxide is present
  (5) Degree of warmth depends on concentration of gas
  (6) Heat is formed as carbon monoxide is changed to carbon dioxide by catalyst (hopcalite)
  (7) Indicator reference - round glass window with two half circles
    (a) Right half is stamped "R" (reference) and is very light blue
    (b) Left half is darker blue
    (c) When left half matches color of right half, canister is to be discarded

g. Facepiece
  (1) Always clean after using
  (2) Sterilize with germicidal solution
  (3) Maintain headbands in good working order
  (4) Replace torn and defective bands
  (5) Defective facepiece should not be used
  (6) Conformity to face is dependent upon adjustment of headbands
  (7) Examine flexible tubing for cuts or breaks

h. Timer (used on plain canister)
  (1) Indicates approximate time of safe use
  (2) Actuated by respirations of wearer
  (3) Pointer on dial makes complete revolution in approximately two hours of continuous or intermittent use
  (4) After one complete revolution of pointer on dial, canister must be replaced

i. Check valve (on window indicator canister)
  (1) Fits into assembly formerly occupied by timer
  (2) Threaded top and bottom for attachment to canister and breathing tube
  (3) The check valve closes after each inhalation
  (4) Check valve remains closed regardless of position of canister
  (5) Check valve assembly eliminates replacement of rubber stopper

- j. Putting on filter-type mask
  (Instructor to demonstrate putting on mask according to instructions on pages 192 and 193 of EVCRM)
- k. Precautions and practices
  (Refer learners to the six items listed on page 193 of EVCRM)

4. Fresh air or hose mask
   - a. Advantages
     - (1) Suitable protection against all atmospherical contaminants
     - (2) Sufficient supply of clean air is provided
     - (3) No resistance to inhalation
     - (4) Surplus air provides cooling and refreshing effect
   - b. Disadvantages
     - (1) Failure of mechanical air supply could jeopardize safety of wearer
     - (2) Trailing of the hose connected to face piece from air source
5. Self-contained breathing apparatus
   - a. Provides protection in any concentration of gases or oxygen deficiency
   - b. Breathing is independent of surrounding atmosphere
   - c. No outside air is admitted to the system
   - d. Three basic types are:
     - (1) Oxygen or air cylinder apparatus
     - (2) Demand apparatus
     - (3) Self-generating apparatus
   - e. Demand type apparatus - relate general information as to:
     - (1) Compressed air or oxygen
     - (2) Flow regulated by breathing
     - (3) Pressure gauge
     - (4) One-quarter and one-half hour supply
     - (5) Emphasize adherence to instructions and information of manufacturer
   - f. Putting on demand-type apparatus
     (Instructor to demonstrate putting on mask according to instructions on page 197 of EVCRM)
   - g. Precautions and practices
     - (1) Amount of exertion by wearer is related to the period of time used
       - (a) 15 minutes for small units (approximate)
       - (b) 30 minutes for large units (approximate)

- (2) Check pressure gauge periodically for time limitations
- (3) Return to fresh air when needle on gauge approaches solid color section
- (4) Remaining air (300 P.S.I.) will last
    - (a) 2 to 3 minutes on small units
    - (b) 4 minutes on large units
- (5) By-pass (red) valve is normally kept closed
- (6) By-pass (red) valve is opened when automatic demand regulator becomes inoperative
- (7) When the by-pass (red) valve is opened, the main line (yellow) handwheel should be closed, and the by-pass (red) valve should be adjusted for proper air flow

h. Removing the mask
(Demonstrate removal of mask according to instructions on page 198 of EVCRM)

i. Care of breath apparatus at station
- (1) Sterilization of facepiece
- (2) Replacement of cylinder
    - (a) Disconnecting
    - (b) Releasing cylinder
    - (c) Replacing cylinder
    - (d) Check pressure release
- (3) Placing apparatus in case for storage
- (4) Emphasize warning about oils and greases

6. Self-generating oxygen mask (chemox)
    - a. Generates own oxygen supply
    - b. Supply independent of outside atmosphere
    - c. Exhaled breath passes into canister
    - d. As it passes through canister, exhaled breath is purified of carbon dioxide and replenished with oxygen
    - e. It is then rebreathed
    - f. This cycle is continuous during use
    - g. Provides protection for approximately 45 minutes
    - h. Apparatus consists of :
        - (1) Facepiece
        - (2) Breathing tubes
        - (3) Breathing bag
        - (4) Breastplate
        - (5) Canister holder
        - (6) Harness straps
        - (7) Manual timer
        - (8) Facepiece assembly equipped with pressure relief valve
        - (9) Breathing bag serves as:

- (a) Reservoir for produced oxygen
- (b) Acts as a cooler for air from canister (chemical in canister produces heat)
- (10) Wearer protected from heat by insulation on breastplate
- (11) Normal breathing contains enough moisture to produce oxygen
  - (a) Water should never be introduced into a used or unused canister

i. Putting on self-generating mask
(Demonstrate putting mask on according to instructions on pages 200 to 203 of EVCRM)

j. Precautions and practices

- (1) No need to purge nitrogen manually, as sufficient oxygen is produced
- (2) Discuss how to relieve excess pressure
- (3) Two indications that will indicate an expended canister:
  - (a) Fogging of lens on exhalation
  - (b) Increased resistance to exhalation
  - (c) These will not normally appear until after 45 minutes of use
  - (d) May appear under conditions of extreme use

k. After use
(Demonstrate and discuss removal and disposal of canister according to instructions on pages 204-205 of EVCRM)

- (1) Care of mask
  - (a) Sterilization of facepiece; hang down while cleaning
  - (b) Remove canister from holder when storing
  - (c) Keep the canister in carrying case
  - (d) Canisters used only once, then disposed of
  - (e) Emphasize precautions against oils and greases
  - (f) Keep face away from opened canister
  - (g) Check inhalation and exhalation valves for corrosion periodically
  - (h) Check plunger and casting for cleanliness and proper operation
  - (i) Check tightness of valves and fittings periodically
  - (j) Replace any part that shows evidence of failure
  - (k) Damaged apparatus to be returned to factory for repair
- (2) Do not use apparatus for underwater rescue
- (3) Do not tie guide line or rope to D-ring on harness strap
- (4) Emphasize adherence to instructions and information of manufacturer

7. One-half hour self-generating mask
    a. Thirty minute protection
    b. Inhalation and exhalation through same tube
    c. Automatic pressure relief valve
    d. Quick starting feature for low temperature
    e. Canister is cylindrical in shape and has opening in each end
    f. Putting on one-half hour self-generating mask (Demonstrate putting on mask according to instructions on pages 207-208 of EVCRM)
    g. When using mask:
        (1) Breathe normally
        (2) Set timer at 30. Bell will ring for 12 seconds when pointer returns to 0
        (3) Return to fresh air when alarm rings
    h. Care and maintenance of apparatus and disposal of canister is the same as that of the regular chemox
    i. Emphasize adherence to instructions and information of manufacturer

C. Audible communication with respiratory equipment
    1. Importance of speaking diaphragm

D. Training suggestions
    1. Wear mask for short period in fresh air and work or exercise.
    2. Wear mask in gas or smoke atmosphere.
    3. Wear mask in gas or smoke while working.
    4. Practice donning mask with and without help.

E. Summary
    1. Work in pairs.
    2. Do not don mask when short of breath.
    3. Harness straps should be kept fully extended to fit largest man.
    4. Learn twisting techniques of harness straps for quick adjustment.
    5. Never remove mask until danger of contaminants has been removed.
    6. Always adjust headbands according to instructions on page 193 in EVCRM.
    7. Always carry extra tanks and canisters on emergency apparatus.
    8. Do not fasten guide line or rope to D-ring.
    9. Fasten guide line or rope to body before donning mask.
    10. In cases of infrequent use, masks should be removed periodically from case and donned by personnel to insure pliability of materials.

GAS MASKS

STEP III - APPLICATION

1. Review chart on pages 188-189 of EVCRM.
2. Conduct gas mask practice in smoke chamber.
3. Include certain rescue procedures in smoke chamber.

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE #18
LESSON PLAN #4

WATER FRONT OPERATIONS

DESIRED RESULTS:

1. To develop in the learner the knowledge and skills necessary for water safety and boat handling.
2. To develop a working knowledge of the methods and procedures of dragging operations.

EQUIPMENT AND SUPPLIES:

1. Boat operated by the squad
2. Oars
3. Life jackets for boat occupants
4. Grappling and dragging equipment
5. Necessary rope
6. Buoys

REFERENCE:

EVCRM - Chapter 22, pages 265 to 290

STEP I - INTRODUCTION OF LESSON

Most drowning victims must be brought to the surface within ten minutes if they are to have a reasonable chance to survive. Beyond that time, the efforts of the squadmen will be largely devoted to the matter of recovering the victim's body. If a body is recovered within a reasonable amount of time, resuscitation (manual or mechanical) should be started immediately.

When a response is made to a water front operation, the safety of all persons concerned should be of prime importance.

There have been many cases in which additional lives have been lost due to untrained squadmen or carelessness on their part.

All operations at the scene of a drowning should be directly in the charge of the emergency squad. This includes not only the recovery operations but the physical control of the scene as well.

STEP II - PRESENTING THE LESSON

A. Boat handling
  1. Parts of a rowboat
     (Give definition of the following and chalkboard drawing.)
     a. Bow
     b. Deck
     c. Frames
     d. Grating or floorboards
     e. Gunwales (gun'ls)
     f. Keel
     g. Oarlocks
     h. Painter
     i. Planking
     j. Port side
     k. Ribs
     l. Risings
     m. Sculling notch
     n. Seats
     o. Skeg
     p. Starboard side
     q. Stern
     r. Transom
  2. Oars and their parts
     (Give definition of the following; use oar to point out part)
     a. Oars
     b. Blade
     c. Button
     d. Grip
     e. Leather
     f. Loom
     g. Throat
     h. Stretcher (part of boat but necessary for rowing)
     i. Thwarts (part of boat but necessary for rowing)
  3. Boarding and rowing
     (Discuss the following steps and refer to Figs. 3 to 6, pages 269-271 of EVCRM)
     a. Making ready
     b. Boarding
     c. Seating the oars
     d. Rowing position

- e. The stroke
  - (1) Catch
  - (2) Pull
  - (3) Recovery
- f. Correcting course
  - (1) Hold
  - (2) Stern all
  - (3) Turning
    - (a) Pivoting
    - (b) Approaching a landing

4. Beginners
   - a. Take your time.
   - b. Think out each move.
   - c. Don't dip blades too deep.
   - d. Keep hands low.
   - e. Don't lift blades too high on recovery.
   - f. Keep your head up.
   - g. Breathe with every stroke.
   - h. Pull evenly on both oars.

B. Boating safety

1. Never overload a boat.
2. Do not use an oar as a fender.
3. Do not stand, rock or skylark in a boat.
4. Do not deliberately bump another boat or crash a landing.
5. Do not give needless alarms or calls for help.
6. Always carry proper lights at night.

(Instructor to discuss material on page 273 of EVCRM)

C. Operations at scene of drowning

1. Squad safety
   - a. Enter water only if victim can be seen and is moving or has been in the water only a few minutes.
   - b. Life jackets to be worn by all occupants of boat.
   - c. A squadman assigned to shore duty to keep boat and occupants under surveillance, to gather information from witness and to secure additional help if necessary.
2. Size up (items to consider)
   - a. How long the victim has been submerged.
   - b. Where victim was last seen.
   - c. How was victim dressed.
     - (1) Swim suit
     - (2) Clothed
   - d. Survey of the body of water as to:
     - (1) Character of bottom
     - (2) Currents
     - (3) Snags and obstructions
     - (4) Depth and width of water

- (5) Conditions of banks or shore
  - (a) Undergrowth
  - (b) Trees, etc.
- (6) Direction of wind

3. General information on drowned bodies
   - a. A body will remain near the spot of drowning.
     - (1) 1 1/2 x the depth of the water = distance body may travel.
       - (a) Example: Water is 20 feet deep. 1 1/2 x 20 = 30 feet the body may travel.
   - b. Bodies of victims who are very fat and bodies of small children may not sink after drowning, but remain floating.
   - c. Body may remain under water 18 to 24 hours, depending on:
     - (1) Temperature of water.
     - (2) Contents of stomach.
     - (3) Body will rise slowly as gas is formed.
     - (4) Victims drowned in rapid waters will probably be found in the first deep hole downstream.
4. Dragging
   - a. Is a blind operation
   - b. Explain grappling hooks
     - (1) Made of wire (last paragraph on page 275 of EVCRM)
   - c. Explain pike pole iron
     - (1) Used in waters with stumps
5. How to locate a body for grappling (Draw on chalkboard and explain Fig. 10, page 276 of EVCRM)
6. Dragging and grappling methods (Draw on chalkboard and explain the following)
   - a. Shore-to-shore
   - b. Boat-to-shore
   - c. Dock-to-dock
   - d. Boat-to-boat
   - e. From a moving boat
   - f. Dragging with several boats
   - g. Grappling with pike pole iron
7. Outboard motors
   - a. Advantages:
     - (1) Saves time getting to spot of drowning.
     - (2) Time and effort saved in rescuing victims of floods.
   - b. Disadvantages:
     - (1) Motor gets in way of dragging operations.
     - (2) Motor moves boat too swiftly, pulls hooks off of bottom.
     - (3) May be difficult to start.
     - (4) Time lost refueling.
     - (5) Mechanical failures.

8. Situations
    a. Review situations shown in Figures 19 to 26, pages 283 to 286 in EVCRM.
9. Skin diving
    a. Should be limited to experts.
    b. Contact local skin diving clubs.
    c. Ohio Highway Patrol provides skin divers.
    d. Preplanning with experts.
10. Recovery during ice conditions
    (Discuss the following; refer to pages 288-290 of EVCRM)
    a. Special equipment
    b. Use of divers
    c. Opening ice
    d. Operations in flowing current

STEP III - APPLICATION

1. If boat and body of water are available, the learners will actually participate in practice.
2. Show proper parts of boat in boatman terminology.
3. Point out safety in boat handling.
4. Assimilate a body and determine area to drag.
5. Have learners carry out recovery procedures.

It will be impossible to check out entire class in this session. Instructor will appoint a competent person to check remainder of group.

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE # 19
LESSON PLAN #5

AERIAL LADDER RESCUE

DESIRED RESULTS:

1. To acquaint the learner with the procedures in using an aerial ladder for raising or lowering a victim.
2. To acquire a high degree of efficiency with the squads and ladder companies in completing the aerial ladder rescue evolution.

EQUIPMENT AND SUPPLIES:

1. One backboard and footrest
2. Two long web belts (7 foot)
3. Three body straps
4. One blanket
5. Two triangular bandages
6. One hose roller
7. Two 1/4" or 1/2" ropes (guy lines)
8. One 5/8" or 3/4" rope

REFERENCE:

EVCRM - Chapter 15, pages 165 to 174

STEP I - INTRODUCTION OF LESSON

There are rescues in which the squadmen are unable to bring the victim up from a low place or down from a high spot in the usual way. Roofs of buildings and the bottoms of cliffs are two examples of such locations. In many such situations where conventional rescue procedures are unsafe, the skillful use of an aerial ladder and appropriate rigging will permit squadmen to reach and rescue a victim with minimum risk.

If on arrival squadmen find that an aerial ladder will be needed, it should be sent for immediately. The squad should be prepared for this kind of emergency by learning the location of all aerial ladders that can be summoned to the area that the squad serves.

STEP II - PRESENTING THE LESSON

A. Procedure for "horizontal" rescue
   1. One man should be in charge
      a. In rooftop operations, man in charge directs from the roof.
   2. Preparing the victim
      a. All needed first aid and emergency care given immediately.
      b. Then logroll victim onto a backboard. (Chapter 13 of EVCRM)
      c. Strap victim to backboard using three body straps.
         (1) First strap across chest and around board.
         (2) Second strap across waist in line with wrists and around board.
         (3) Third strap just above the knees and around board.
      d. Triangular bandages to secure:
         (1) Head - bandage through slots provided and across forehead or eyes.
         (2) Feet - tie feet together to footrest.
   3. Insert large web rescue belts
      a. Through slots provided on each side of backboard.
   4. Arrival of ladder truck
      a. Position truck with turntable in a line with victim.
      b. Observe potential hazards such as wires, trees, etc.
      c. Position truck's outriggers (jacks).
      d. Extend fly ladder four rungs.
      e. Secure hose roller to top rung.
      f. One end of large rope is tied to top rung with clove hitch.
      g. Remainder of rope is brought down ladder and put on turntable.
      h. At direction of man on roof, ladder is extended to him.
      i. Top rung is brought directly over victim.
      j. Remove large rope from top rung; place over hose-roller.
      k. Pass rope through all four "D" rings of rescue belts.
      l. Tie a bowline and a half hitch.
      m. Ladderman on turntable will pull up all slack on direction of man in charge on roof.
      n. Rope is then tied double to the metal foot bar or plate at bottom of ladder.
      o. Extend fly or raise ladder until victim is 3 to 4 feet from the surface; then stop.
      p. Small ropes are tied to backboard and dropped over roof to the two laddermen who will maintain them as guy lines.

  - q. The aerial ladder is then retracted or rotated or both until the victim is clear of building and all obstacles.
  - r. Victim is now lowered to the ground to the waiting stretcher.

B. Procedure for "vertical" rescue
(Instructor note) Procedure is the same as the horizontal rescue with the following exceptions:

1. Large rope is put through the two top hand holes and a bowline is tied with the knot in front of the board. (Fig. 13, page 172 of EVCRM)
   - a. Large web rescue belts are not used in vertical rescue.
2. After board is raised 3 or 4 feet, guy ropes are placed at the bottom holes of the board.
   - a. Guy ropes are then dropped to the laddermen on the ground to guide board during lowering.

STEP III - APPLICATION

1. Actual demonstration to be carried out. If department being taught does not have an aerial ladder, prior arrangements should have been made to have a neighboring truck company available.

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE #20
LESSON PLAN #6

CUTTING TORCHES

DESIRED RESULTS:

1. To convey the importance of the proper use of the cutting torch.
2. To develop the skill with which the learner will be able to put the cutting torch into service as quickly as possible.

EQUIPMENT AND SUPPLIES:

1. Complete cutting torch including large tanks
   (If squad being taught does not have a cutting torch, prior arrangements should have been made to provide one for this lesson)
2. Cutting tips
3. Oxygen and acetylene regulators
4. Five-way wrench
5. Two or more pairs of goggles
6. Flint scratcher or lighter
7. Asbestos blanket (to protect victim)
8. Asbestos or leather gloves
9. Wrecked automobile or suitable material for cutting practice.
10. Proper fire extinguishers and charged 1 1/2" hose lines

REFERENCE:

EVCRM - Chapter 19, pages 217 to 226

STEP I - INTRODUCTION OF LESSON

On many occasions, emergency and rescue squads are called upon to rescue victims trapped or confined by metal. The cutting torch provides a method of making an effective rescue. In view of the evident importance of this tool, it is essential that every squadman be familiar with its correct use, with its limitations, and with its care.

Due to the use of highly flammable and fire supporting gases, there are many safety factors that must be considered when using a cutting torch.

STEP II - PRESENTING THE LESSON

A. Cutting torches and equipment
  1. Used to cut steel, wrought iron and other ferrous metals.
  2. Equipment is usually portable and consists of:
    a. Two tanks
      (1) Oxygen
      (2) Acetylene
    b. Regulators
    c. Gauges
    d. Hose
    e. Torch with extra tips
    f. Lighter
    g. Goggles
    h. Tip cleaners
    i. 5-way wrench
    j. Asbestos or leather gloves
    k. Marking chalk

    (Instructor to have complete cutting outfit disassembled. Discuss each part and piece of equipment and assemble in the following order. Stress safety factors.)

B. Assembling cutting outfit
  1. Oxygen cylinder
    a. Made of seamless steel.
    b. Fusible plug at the top near the valve.
      (1) Allows gas to escape safely if tank is subjected to dangerously high temperatures.
    c. Full tank contains 1800 to 2000 P.S.I.
    d. Cylinders are made in various sizes.
    e. Valve is especially designed to withhold extremely high pressure.
      (1) Valve has right hand threads.
      (2) Must be opened complete.
    f. Oxygen is obtained from air and is odorless, colorless, harmless to breathe and will not burn.
      (1) Oxygen will support combustion.
  2. Acetylene cylinder
    a. Made of special steel cylinders.
    b. Cylinders loosely filled with an acetone saturated asbestos absorbent.
      (1) Acetone will dissolve acetylene gas under pressure.
      (2) Acetone remains in cylinder as gas is used. Used repeatedly with no loss.

- c. Full tank contains 200 to 400 P.S.I.
  - (1) Tank containing 220 cubic feet of gas will only have 250 P.S.I.
  - (2) This provides a greater safety margin.
- d. Fusible plugs in bottom and top of cylinder are additional safety factors.
- e. Valves have right hand threads and require a special square wrench.
  - (1) Open valve 1 1/2 turns only.
  - (2) This allows for quick shutdown in case of emergency.
- f. Diameter of threaded outlet is smaller than that on the oxygen cylinder.

3. Regulators

   (Discuss and connect to tanks.) (Be sure to "crack" tank before connecting)
   - a. Oxygen and acetylene regulators should be two-stage. Each regulator to have two gauges.
     - (1) Oxygen regulator
       - (a) 1st stage gauge reads 0 to 3000 pounds and registers in pressure contents of tank.
       - (b) 2nd stage gauge reads 0 to 200 pounds and registers the flow from regulator to the torch tip.
     - (2) Acetylene regulator
       - (a) 1st stage gauge reads 0 to 400 pounds and registers pressure in tank.
       - (b) 2nd stage gauge reads 0 to 30 pounds and registers the flow from the regulator to the torch.
4. Hose

   (Discuss and connect to regulators)
   - a. Oxygen hose
     - (1) Usually green in color.
     - (2) Has right hand threads.
   - b. Acetylene hose
     - (1) Usually red or black in color.
     - (2) Has left hand threads.
     - (3) Acetylene hose connecting nut usually has a groove around its diameter.
5. Cutting torch

   (Discuss and connect)
   - a. Handle or torch body
   - b. Valves
     - (1) Oxygen valve
     - (2) Gas (acetylene) valve
     - (3) Oxygen cutting lever

- c. Torch tip
  - (1) Contains at least 5 holes.
  - (2) Right angled tip is best.
- d. Mixing chamber
  - (1) Located above the tip.

6. Opening tanks to regulator
   - a. Before turning on tanks, be sure that regulator flow valves are turned out and loose.
     - (1) Turning counter-clockwise will loosen valve.
   - b. Acetylene cylinder valves opened 1 1/2 turns only.
     - (1) This allows for fast shutdown in case of emergency.
   - c. Oxygen cylinder valve opened completely.
   - d. Both 1st stage gauges will then indicate the amount of gas within the tanks.
   - e. Check for leaks at tank outlet and gauges.
     - (1) Use hands and face
       - (a) To smell, hear or feel.
7. Preparing to light the torch
   - a. Adjust working pressures by turning t-handle on the regulators clockwise or in. (Right hand threads)
   - b. Pressures required will vary with size of tip and thickness of metal to be cut.
     - (1) Table supplied with torch will indicate pressure settings.
     - (2) In many cases, pressure settings of oxygen - 30 pounds, acetylene - 5 pounds will allow the torch to cut up to two inches thick.
8. Lighting the torch

   (Many manufacturers and experienced individuals have established different methods and procedures for lighting the torch. Regardless of procedure used, a proper preheating or neutral flame must be established. One method is outlined here.)
   - a. Hold the torch with the tip in an upward position at all times so learners can see.
   - b. Goggles must be worn.
   - c. Slowly open the acetylene valve on the handle about 1/2 turn.
   - d. Ignite the gas with the scratcher.
   - e. Open the acetylene valve until the flame clears the end of the tip about 1/8 of an inch; then slowly close valve to cause the flame to reseat on the tip.

f. Slowly open the oxygen valve on the torch handle until the neutral flame is established.
    (1) This will be indicated by the sharp inner cones.
g. After the neutral or preheating flame has been established, depress the oxygen cutting lever.
    (1) If necessary, readjust the oxygen valve with the oxygen cutting lever depressed until the preheat flame is again neutral.

9. Start the cut
    a. Maintain support for arms and hands while cutting.
        (1) In situations where support may be impossible, hold arms close and tight to your body.
    b. Direct the preheat flame on one spot where the cut is to be started.
        (1) Chalk can be used to mark the path of the cut.
    c. When the spot appears to be a bright cherry red and the metal begins to melt, depress the oxygen cutting lever slowly.
        (1) If the lever is depressed too soon, the oxygen will chill the area and prevent cutting.
    d. When the cut has started, move the torch in the direction you wish to cut.
        (1) Moving too fast loses the cut.
        (2) Moving too slow will fuse the cut.
    e. Hold the torch so that the cone ends of the preheat flame just clear the metal.
        (1) This may vary, depending on thickness of metal to be cut.
    f. The bottom of the "kerf" or cut should be kept a little ahead of the top.
        (1) Accomplished by holding the cutting tip at an angle in direction of the cut.

10. Shutting down the torch
    a. Close acetylene valve on torch first.
    b. Close oxygen valve on torch. (This procedure is used as a safety measure to allow the oxygen to flush out what acetylene may be in torch.)
    c. Close both cylinder valves.
    d. Open acetylene valve at torch.
    e. Release acetylene regulator valve.
        (1) Turn counter-clockwise.
    f. Open oxygen valve at torch.
    g. Release oxygen regulator valve.
        (1) Turn counter-clockwise.

11. Care of cutting torch
    - a. Always use a good wrench.
    - b. Never use oil or grease on any part.
    - c. Always check for leaks before lighting.
    - d. Have regulators in off position before turning on tanks.
    - e. Keep hose and equipment free of oil and dirt.
    - f. Protect hose from cuts, hot metal, etc.
    - g. Check hose for deterioration.
    - h. Check goggles for breaks and dirt.
    - i. Inspect tanks for leaks and maintain proper pressure.
12. Rescue procedures
    - a. All lifesaving emergency care should be carried out before cutting begins.
    - b. Protect victim from:
        - (1) Heat
        - (2) Smoke
        - (3) Flame
    - c. Cover victim with asbestos or wet blanket.
    - d. Proper extinguisher must be in position and ready for use.
    - e. If liquid petroleum is present:
        - (1) Call for pump company.
        - (2) Wash away liquid petroleum.
        - (3) Have charged 1 1/2" hose line ready when cutting.
    - f. Thorough inspection must be made after victim is free to make sure all fire has been extinguished.
13. Maintain a list of individuals or companys who can supply additional tanks of acetylene and oxygen for extended cutting operations.
14. Review the established situation with learners as shown on pages 224-225, Figures 4 to 7 of EVCRM.

STEP III - APPLICATION

1. Have each learner light torch.
2. Have each learner use the cutting torch.
3. Stress safety.

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE #21
LESSON PLAN #7

ELECTRICAL EMERGENCIES

DESIRED RESULTS:

1. To impress upon the learner the potential hazards associated with electrical emergencies.
2. To develop in the learner a method of handling electrical emergencies.

EQUIPMENT AND SUPPLIES:

1. Chalkboard, chalk and eraser
2. 100 ft. section of 1/4" rope with a 1/2 pound weight attached to each end
3. Electrician's gloves
4. Hot sticks
5. Short ladder

REFERENCE:

EVCRM - Chapter 18, pages 211 to 216

STEP I - INTRODUCTION OF LESSON

A squadman may be required to face situations involving electrical equipment or wiring during certain rescue operations. He should be able to recognize the potential electrical hazards and should know the proper action to take.

Saving property alone never justifies the risk of a man's life. Where life is involved, the urgency is greater and requires prompt action by the squadman. However, he should think before he acts.

STEP II - PRESENTING THE LESSON

A. Recognizing the danger
   1. All wires are potentially dangerous.
   2. All fallen wires should be regarded as being energized until proven otherwise.
   3. The amount of current or amperage in the wire determines the actual threat to life.

a. Amperage (amps) is the current or flow of electricity.
b. Voltage is the pressure applied to cause the current or amperage to flow.

4. Low voltage (110-120) can cause much damage to a human body (fibrillation), especially if the body is well grounded.
5. Fallen wires may energize the ground for a considerable area.
   a. Hazard is much greater during damp or rainy weather.
6. Circuit breakers
   a. Open the circuit when a short or overload exists.
   b. Close automatically in a matter of seconds.
   c. If short still exists, circuit breakers open again.
   d. This can cause a downed wire to whip with each electrical surge.
7. Invisible danger
   a. Downed wires on automobiles or the ground may show no evidence of being energized.
   b. Wires laying across a wire fence can energize the fence for a considerable length.
   c. Repeat that all downed wires present potential hazards and danger.

B. Acting in an emergency
   1. Stay clear of all fallen wires and call the power company.
   2. If a victim is involved, waiting for the power company may mean the difference between life and death.
   3. A reasonable working knowledge of the potential electrical hazards is a must for all rescue personnel.
   4. If wires are down, on arrival squads can generally proceed as follows:
      a. Radio for the power company.
      b. Move the crowd back at least one span each way from the broken or sagging wires.
         (1) The span of wires adjacent to the trouble may be weakened.
         (2) Any movement may burn other wires down.
         (3) Wires on the ground may burn through, curl up or roll along the ground.
         (4) Flashes may occur causing eye injuries, etc.
   5. Emergencies involving vehicles
      a. Rubber tires insulate the vehicle from the ground.
      b. No flow of current from vehicle to the ground.

- c. Passengers will be relatively safe if they remain in the vehicle.
- d. A person touching the vehicle while in contact with the ground will complete the circuit; this may prove fatal.
- e. If victim insists on leaving vehicle, squadman must instruct him how to jump out..
  - (1) Make certain hands or feet do not touch car when coming in contact with the ground.
    (Instructor to discuss and demonstrate this procedure.)
- f. Relate example of women leaving energized car, etc.

6. Charged emergency apparatus
   - a. Aerial ladders may come in contact with overhead wires.
   - b. Wires may fall across vehicle.
   - c. Contact must not be made with apparatus and ground.
   - d. If necessary to leave the vehicle, jump off, do not step off.
   - e. Hands, feet and body must clear vehicle before contact is made with the ground.
   - f. When on the ground, be sure you do not touch the vehicle again.

C. Handling energized wires

1. Dry rope thrown from a reasonable distance over high voltage wires is relatively safe.
2. Using wet rope may prove fatal.
3. Polypropylene rope is completely non-conductive.
   - a. It will not absorb moisture.
   - b. Used by all power companies.
4. Rope-and-weight tool
   - a. Consists of 100' of 1/4" rope with 1/2 pound weights attached to each end.
     (See Figure 1, page 213 of text)
   - b. This tool can be used to gain control of a fallen wire.
   - c. Must be used with approved gloves and hot stick.
5. Using the rope-and-weight tool
   (Fig. 3, page 214 of text)
   - a. Clear all persons from the area.
   - b. Put on linemen's gloves and protectors.
   - c. Stand opposite the point from which you will move the wire and approximately 30' from the wire.
   - d. Throw one end of weighted rope under the wire.
   - e. Throw the other end over the wire.
     - (1) Making sure that it lands near the first weight thrown.

f. Pick up the two weighted ends with the hot stick.
  (1) Drag wire clear.
  (2) Be sure wire is guarded.
g. Keep in mind that the ground may be energized for some distance around the fallen wire.

6. Hot sticks
  a. Specially designed tool to handle energized wires.
  b. Specially treated to prevent moisture penetration.
  c. Made of wood or fiberglass.
  d. Store in dry compartment.
  e. Should be inspected at regular intervals by competent individual or concern.
7. Removing victim from wire
  a. Victim may be lying on an energized wire.
  b. Quick method is to push or pull the victim from the wire using a hot stick.
  c. Rescuer to stay as far away from victim as hot stick will permit.
  d. If additional hot stick is available, one man can hold wire while the other removes victim.
    (1) Prevents wire from whipping when free of victim.
    (2) Keeps wire grounded and prevents additional shock and burns to victim.
  e. Procedure when hot sticks are not available:
    (1) Use long dry rope as previously mentioned.
    (2) Loop rope around some part of victim's body (leg, arm), and drag victim free.
    (3) Rescuer to take all precautions to prevent his body or clothing from making contact with victim or wire.
    (4) Order all bystanders away from danger area.
8. First aid after rescue
  a. Victim may require any or all of the following:
    (1) Resuscitation and closed chest heart compression
    (2) Care for shock
    (3) Care for burns
    (4) Care for lacerations
    (5) Care for fractures
  b. All victim care will be given as previously stated in this course.

STEP III - APPLICATION

A. Demonstrate and have learners carry out the following:
  1. Proper way to leave an energized car.

2. Proper way to jump off of an energized emergency vehicle.
3. How to loop a victim with a dry rope for removal from "hot" wire.
4. How to use the rope-and-weight tool.

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.

TEACHING GUIDE #22
LESSON PLAN #7

UNUSUAL SITUATIONS

DESIRED RESULTS:

1. To impress upon the learner the necessity to exercise initiative when confronted with unusual situations.
2. To instill in the learner the necessity of preplanning and cooperation with other agencies.

EQUIPMENT AND SUPPLIES:

1. Chalkboard, chalk and eraser
2. Pictures showing some unusual situations
3. 16 mm. movie sound projector and screen
4. Movie, "Cockpit Entry"

REFERENCE:

EVCRM - Chapter 23, pages 291-306

STEP I - INTRODUCTION OF LESSON

It is not possible to show or discuss every conceivable type of accident or injury in any one manual or course of instruction or to list the unlimited number of circumstances that might surround an accident. Squadmen should foresee, however, many of the situations in which they may find themselves and formulate the necessary preplanning with cooperative agencies and individuals.

An accident which is not usually out of the ordinary may develop into an unusual situation because of the time and/or place of such an accident.

Example: A fire in a school building at 3:00 a.m. may be nothing more than another structural fire; but a fire in a school building at 10:00 a.m. with classes in session can definitely present many unusual situations.

STEP II - PRESENTING THE LESSON

A. Highway accidents
  1. Review the situation as described on page 292 of the text.
  2. From experience discuss some unusual highway accidents.

B. Home explosions
  1. Review the situation as described on page 293 of the text.
  2. From experience discuss any other dwelling explosion.

C. Store building explosions
  1. Review the situation as described on pages 294-295 of the text.
  2. Relate any similar experience you may have encountered.

D. Airplane accidents
  1. Review the situation as described on pages 296-297 of the text.
  2. Relate any similar or related experience you may have encountered.

E. Jet cockpit entry procedure
  1. Canopy ejection (if no fumes are present)
    a. Remove access door on left hand side of fuselage, just forward of wing leading edge.
    b. Reach inside, grasp exposed lanyard handle, extend about six feet and jerk.
    c. Watch path of canopy during ejection to avoid being hit. Canopy will normally fall adjacent to tail section.
    d. Caution all rescue personnel to avoid area around tail section during canopy ejection.
  2. Canopy break-in (if fumes are present or if canopy cannot be ejected)
    a. Break canopy glass in lower forward corner on either side of airplane. Use heavy maul (approximately 8 pounds).
    b. Strike blows close to canopy frames.
    c. Break out sufficient glass to permit removal of pilot.
    d. A CO_2 extinguisher applied to canopy glass will facilitate a faster entry by making the glass brittle and easier to break.
    e. Seat ejection mechanism
      (1) Disarm ejection seat by cutting tube behind pilot's head.
      (2) Cut all tubes behind pilot. Some aircraft have more than one tube.

- f. Remove pilot's helmet face plate.
    - (1) Pull down on green cord beneath chin and lift face plate free.
    - (2) This must be done before detaching oxygen supply hose.
- g. Disconnect oxygen supply hose.
    - (1) Detach or cut hose attached to pilot's suit.
- h. Release seat belt and shoulder harness.
    - (1) Unlock buckle at pilot's waist.
- i. Remove victim from cockpit.
    - (1) Lift out by the shoulders.
    - (2) Squadman should stand on plane just behind the pilot when lifting.

F. Bus accidents

Modern buses have special construction features which must be understood by emergency squadmen for the successful rescue of trapped victims, as well as their own safety.

The following is a description of the "Greyhound Scenicruiser" adapted from information supplied by Eastern Greyhound Lines:

1. Rescuing passengers
    - a. Bus is 10' 11" high and 40' long. Weight empty is 30,000 pounds; loaded weight is 40,000 pounds. Forty-three passengers can be seated in the coach, 33 on the upper deck and 10 on the lower level.
    - b. There is no emergency door.
        - (1) Access from outside is through the windows or skylights.
            - (a) Windows hinged at the top and opened by prying out at the lower frame.
            - (b) Windshield and skylights opened by removing the rubber locking strip which runs around the windshield and skylights.
            - (c) Restroom located behind the driver's seat.
            - (d) Window in restroom opened, as previously stated.
2. Blocking the coach body
    - a. Block bus before crawling under or put head and shoulders in wheel housing.
    - b. Bus uses air-suspension.
        - (1) Consisting of rubberized nylon bellows.
        - (2) Contains 40-50 pounds of air.

(3) When bellows are damaged, coach can drop to within 3 to 3 1/2 inches from ground without any warning.
(4) Blocking of bus involved in accident is a must.
c. Coach has no frame
(1) Equipped with jack plates
(2) Under body behind rear wheels
(3) Jack or block under a solid bulkhead
(a) Front and rear of all wheels

3. Disconnecting batteries
a. Circuit breaker protects electrical system
b. If necessary to disconnect batteries from electrical system:
(1) Push up on battery disconnect switch
(2) Located at rear of battery compartment
(3) Access through center engine door

4. Engine and fuel
a. Equipped with eight cylinder diesel engine
b. Emergency engine stop switch located on driver's left switch plate
(1) If engine cannot be turned off by switch, discharge CO_2 extinguisher into air intakes
(a) Located at right rear corner of coach
c. Care to be taken when opening rear engine compartment
(1) Fans do not have a safety guard
d. Fuel tank holds 180 gallons of diesel fuel
(1) Located back of front wheels, running across the coach
(2) Filler cap on right side
(3) Tank has no shut-off control
(4) No gasoline carried on coach

5. Extinguishing fires
a. Fires most vulnerable at:
(1) Brakes of trailing axle
(2) Transmission
(3) Engine compartment
b. Transmission fires to be attacked over the rear wheels with fog.
(1) Do not place head or shoulders between wheels and coach body.

6. Air-suspension in other vehicles
a. Used on inter-city buses, city-type buses, trucks, trailers and on one type of train.
b. Squad members should become familiar with air-suspension systems used in their area, as well as those which may pass through their area.

G. Farm accidents
  1. Review the situation as described on pages 303 to 306 of the text.
  2. Relate any similar experiences you may haved encountered.

STEP III - APPLICATION

1. Distribute and discuss pictures of some unusual situations (if available).
2. Show film "Cockpit Entry."
3. Ask learners for situations of some unusual accidents they may have encountered.
4. Have each learner use the rope-and-wheat tool. (Use a rope to simulate a downed wire.)

STEP IV - CHECKING AND FOLLOW-UP

1. Question and answer period.
2. Reteach any portion of lesson not thoroughly understood.